

# Highly Pathogenic Avian Influenza

## A Threat to U.S. Poultry

Worldwide, there are many strains of avian influenza (AI) virus that can cause varying amounts of clinical illness in poultry. AI viruses can infect chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds. Migratory waterfowl have proved to be the natural reservoir for this disease.

AI viruses can be classified into low pathogenic (LPAI) and highly pathogenic (HPAI) forms based on the severity of the illness they cause. Most AI virus strains are LPAI and typically cause little or no clinical signs in infected birds. However, some LPAI virus strains are capable of mutating under field conditions into HPAI viruses.

HPAI is an extremely infectious and fatal form of the disease for chickens. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) works to keep HPAI from becoming established in the U.S. poultry population. HPAI can strike poultry quickly without any infection warning signs. Once established, the disease can spread rapidly from flock to flock. It is essential for the U.S. poultry industry to be alert to this disease threat.

## Clinical Signs

Birds affected with HPAI may show one or more of the following signs:

- Sudden death without clinical signs
- Lack of energy and appetite
- Decreased egg production
- Soft-shelled or misshapen eggs
- Swelling of the head, eyelids, comb, wattles, and hocks
- Purple discoloration of the wattles, combs, and legs
- Nasal discharge
- Coughing, sneezing
- Incoordination
- Diarrhea

## Economic Impact of an HPAI Outbreak

A major outbreak of HPAI would be costly to the poultry industry, consumers, and taxpayers. Eradication of an HPAI outbreak that occurred during

1983 and 1984 in the northeastern United States resulted in the destruction of more than 17 million birds at a cost of nearly \$65 million. This outbreak also caused retail egg prices to increase by more than 30 percent.

## Introduction and Spread of HPAI Virus

Exposure of poultry to migratory waterfowl and the international movement of poultry, poultry equipment, and people pose risks for introducing HPAI into U.S. poultry. Once introduced, the disease can be spread from bird to bird by direct contact. HPAI viruses can also be spread by manure, equipment, vehicles, egg flats, crates, and people whose clothing or shoes have come in contact with the virus. HPAI viruses can remain viable at moderate temperatures for long periods in the environment and can survive indefinitely in frozen material. One gram of contaminated manure can contain enough virus to infect 1 million birds.

## Potential Threat to Human Health

In some instances, strains of HPAI viruses can be infectious to people. Human infections with the avian influenza viruses under natural conditions have been documented in recent years. The H5N1 strain, isolated in Hong Kong in 1997, was highly pathogenic for chickens and caused a limited outbreak in 18 people. Six of these individuals died. Since mid-December 2003, a growing number of Asian countries have reported outbreaks of HPAI in chickens and ducks. The rapid spread of HPAI, with outbreaks occurring at the same time, is historically unprecedented and of growing concern for human health as well as for animal health.

According to the World Health Organization (WHO), particularly alarming is the HPAI strain of most of these outbreaks—H5N1—which has jumped the species barrier causing severe disease, with high mortality in humans. For this reason, poultry personnel and avian health care specialists should wear adequate personal protective equipment, such as boots, coveralls, gloves, face masks, and headgear, and follow appropriate sanitary and disinfectant procedures when on premises known or suspected to be infected with HPAI.

Of greater concern to WHO is the possibility that the present situation, if the virus acquires human influenza genes, can give rise to human-to-human transmission and possibly another influenza pandemic in people.

## Trade Restrictions

Because many Asian countries are not considered free of another contagious poultry disease, exotic Newcastle disease (END), the United States restricts imports of poultry and poultry products from all Asian countries. Therefore live birds, poultry and hatching eggs would be quarantined for 30 days, and would be tested for END and AI while in quarantine.

Regulations require that poultry meat be cooked or processed in a manner that would ensure that the virus be inactivated if it were present. Additionally, poultry meat is not imported from Asia because USDA's Food Safety and Inspection Service (FSIS) has not approved Asia's poultry meat processing plants. However, poultry meat extract (i.e., instant soup and chicken noodle soup) can be imported as these contain less than 2 percent meat and are not subject to FSIS regulations. The National Center for Import/Export (NCIE) issues import permits for these extracts requiring government certification of cooking at boiling temperature or at least cooked to 72 C internal temperature. When a product reaches this internal temperature the END and HPAI viruses are considered inactivated.

Other poultry products may be imported for research or commercial purposes depending upon the pre-importation processing protocols. These poultry products require an import permit issued by NCIE.

## Biosecurity Measures on the Farm

Poultry producers should strengthen biosecurity practices to prevent the introduction of HPAI into their flocks. The following are some sound biosecurity practices:

- Keep an "all-in, all-out" philosophy of flock management.
- Protect poultry flocks from coming into contact with wild or migratory birds. Keep poultry away from any source of water that may have been contaminated by wild birds.
- Permit only essential workers and vehicles to enter the farm.
- Provide clean clothing and disinfection facilities for employees.
- Thoroughly clean and disinfect equipment and vehicles (including tires and undercarriage) entering and leaving the farm.
- Do not loan to, or borrow equipment or vehicles from, other farms.
- Avoid visiting other poultry farms. If you do visit another farm or live-bird market, change footwear and clothing before working with your own flock.
- Do not bring birds from slaughter channels, especially live-bird markets, back to the farm.

## Biosecurity Measures at Live-bird Markets

To prevent a possible outbreak of HPAI, poultry producers and dealers must also use biosecurity precautions at live-bird markets. Live-bird markets operate in many major cities.

Avian influenza viruses can be introduced into these markets if they receive infected birds or contaminated crates and trucks. Once the virus is established in the market, the movement of birds, crates, or trucks from a contaminated market can spread the virus to other farms and markets. Therefore, the following protective measures should be taken at live-bird markets to prevent the possible spread of disease:

- Use plastic instead of wooden crates for easier cleaning.
- Keep scales and floors clean of manure, feathers, and other debris.
- Clean and disinfect all equipment, crates, and vehicles before returning them to the farm.
- Keep incoming poultry separate from unsold birds, especially if birds are from different lots.
- Clean and disinfect the marketplace after every day of sale.
- Do not return unsold birds to the farm.

For more specific information about biosecurity and cleaning and disinfection practices, contact your local APHIS' Veterinary Services (VS) office.

## Disease Prevention Activities

To prevent HPAI from being introduced into the United States, USDA requires that all imported birds (poultry, pet birds, birds exhibited at zoos, and ratites) be quarantined and tested for this virus before entering the country.

In addition to international import restrictions, APHIS and State veterinarians specially trained to diagnose foreign animal diseases regularly conduct field investigations of suspicious disease conditions. This surveillance is assisted by university personnel, State animal health officials, USDA-accredited veterinarians, and members of industry who report suspicious cases.

Furthermore, APHIS and State animal health officials work cooperatively with the poultry industry to conduct surveillance at breeding flocks, slaughter plants, live-bird markets, livestock auctions, and poultry dealers.

If HPAI were detected in U.S. poultry, APHIS veterinarians would work quickly with their State counterparts and the industry to implement measures such as quarantine, control, and cleanup to prevent opportunities for the virus to spread.

## Report Suspicious Signs

If birds exhibit clinical signs of HPAI or may have been exposed to birds with the disease, immediately notify Federal or State animal health officials.

For more information about HPAI or biosecurity practices, contact:

USDA, APHIS, VS  
Emergency Programs  
4700 River Road, Unit 41  
Riverdale, MD 20737-1231  
Telephone (301) 734-8073  
Fax (301) 734-7817

For public health information, contact the Centers for Disease Control and Prevention in Atlanta, GA, at (404) 639-3311. For import information contact APHIS, VS, NCIE at (301) 734-3277 or at the Web site

[www.aphis.usda.gov/vs/ncie/importing.htm](http://www.aphis.usda.gov/vs/ncie/importing.htm)

Current information on animal diseases and suspected outbreaks is also available on the Internet at <http://www.aphis.usda.gov>.

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