

Pennsylvania Department of Agriculture Avian Influenza Response Plan

- [Avian Influenza Response Plan 1-20-06 \(doc\)](#)

Background Information

Avian Influenza (AI) is a disease that affects waterfowl and domestic poultry, and is caused by type A influenza virus. Waterfowl seem to be more resistant than poultry to AI. Among domestic poultry, turkeys are infected more commonly than chickens. AI is labeled as either "high pathogenicity" or "low pathogenicity", based on antigens found on the surface of the virus. The highly pathogenic AI has commonly been referred to as "Fowl Plague". These terms refer to infection with a virulent strain of type A influenza virus. Although all virulent strains isolated to date have been either of the H5 or H7 subtype, most H5 and H7 isolates have been of low virulence. The fact that the "low path" AI may undergo a genetic mutation and become "high path" AI is a concern for the poultry industry, and is the reason why many flocks that are identified as being infected with the less pathogenic form are culled.

Symptoms

The symptoms resulting from infection with AI can vary from a mild drop in fertility and/or egg production to a highly fatal, rapidly spreading epidemic, depending on the strain of virus, host factors, and environmental factors. In some flocks, the only evidence of infection is seroconversion of the birds: They develop antibodies to the virus that are detectable on laboratory tests. Infection often manifests as respiratory infection in a large number of birds in a flock, with coughing and sneezing, along with decreased egg production and increased mortality. Other signs that may appear include edema and cyanosis of the head, neck, and wattle; greenish diarrhea; and bloody oral and nasal discharge. Turkeys, ducks, and quail often present with sinusitis.

Transmission

AI is transmitted among susceptible birds through aerosolization: Susceptible birds inhale virus particles from nasal and oral secretions, and feces, of infected birds. Waterfowl act as a reservoir for the virus, by carrying it in their intestinal tract and shedding particles in their feces, which can later be inhaled by other birds.

Prevention

Proper biosecurity measures are the first line of defense against a flock becoming infected with AI.

Because wild birds harbor the virus, they should be considered a major source of AI, and direct contact between wild birds and their feces and domestic poultry should be prevented.

Infected poultry can also be a source of virus, and shed virus particles in saliva, nasal secretions, and feces during the first 2 weeks of infection. Usually after 4 weeks, virus can no longer be detected in infected birds. Because of this, preventing direct contact between newly infected birds and other susceptible birds is an important technique to prevent spread of the disease through a flock.

Virus particles can also be spread indirectly via contaminated clothing, shoes, vehicles, equipment, etc. By restricting traffic onto the premises, and proper cleaning and disinfection protocols, the threat of spreading disease through indirect transmission can be reduced.

Live bird markets are also considered to be an important source of AI. When AI has been detected through testing, it is important to avoid contact with these markets to avoid bringing disease back onto your premises. Although closure of the PA, New Jersey, and New York markets for cleaning and disinfection was planned last year, it has been postponed until further notice.

Cleaning and Disinfection

The AI virus is readily inactivated by heat and drying, and is very sensitive to most disinfectants and detergents. However, before disinfection, all organic material must be removed, because the virus is protected by organic material, and may live in manure for up to 105 days.

Contaminated poultry houses are heated for several days to inactivate virus. Once the carcasses are removed, other organic material is removed, followed by complete cleaning and disinfection of all surfaces.

Contaminated litter and manure is problematic and should be composted or buried to ensure that it does not spread infectious virus.

Diagnosis

Serology testing may be used for screening for infected flocks, but the preferred method of diagnosis is by growing AI through the inoculation of embryonated fowl eggs. (For more specific information, go to Manual of standards for diagnostic tests and vaccines, 4th edition, 2000).

Vaccination

Although vaccines may prevent clinical signs of AI infections in poultry, there are 15 subtypes of the virus, and there is no cross-protection between types. Therefore, a vaccine designed to prevent symptoms from 1 type of the virus will not protect the flock against another type. Since there is no way to predict which type of virus may infect a flock, it is not practical to vaccinate to prevent infection. Vaccination of a flock also has implications in world trade.