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CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

Avian Influenza

April 2014

Introduction

Avian Influenza (AI) is a contagious disease caused by many subtypes of Type A influenza viruses. They can infect a wide variety of domestic and wild birds. AI viruses can be classified as either low pathogenicity avian influenza (LPAI) or high pathogenicity avian influenza (HPAI) based on the severity of the illness they cause in poultry. Most strains are classified as LPAI and cause few clinical signs in infected birds. In contrast, HPAI causes a severe illness with a high mortality rate among infected poultry. Some low pathogenic viruses in the H5 and H7 groups have a genetic structure that enables them to potentially change to the HPAI form. Consequently, regulatory agencies may treat them as HPAI regardless of their disease manifestations in poultry.

Historically, HPAI has been responsible for devastating disease outbreaks in commercial poultry worldwide. Outbreaks are controlled through government programs involving movement restrictions, the destruction of infected flocks and targeted vaccination.

Significant Global Events

Until recently, human infection by AI virus was unknown. However, in 1997, an AI virus, H5N1, was transmitted directly from chickens to people in Hong Kong. This strain reemerged in Asia in late 2003. Since then there have been over 600 human cases with approximately 60% fatalities, mostly in Indonesia, Vietnam and Egypt. Bangladesh, China, Egypt, India, Indonesia, and Vietnam are considered endemic for this strain of Avian Influenza A H5N1.

A HPAI strain in the H7N3 group was detected in Mexico in 2012; no human cases have been reported to date. In 2013 a LPAI strain of H7N9 appeared in China. It can cause significant disease in people but causes minimal clinical signs in poultry. As of March 2014 there have been about 380 human cases with 118 deaths.

Poultry and poultry products raised in the U.S. are safe to eat and should be handled and prepared according to public health guidelines. For updated information visit http://www.cdc.gov/flu/avian

HPAI in the U.S.

The last major HPAI outbreaks in the U.S. occurred in Pennsylvania in 1983 and 1984. Eradication costs at that time exceeded $60 million. In February 2004 HPAI (H5N2) detected during routine surveillance on a small poultry premises in Texas was quickly contained and eradicated.

Spread of the Disease

Avian Influenza viruses occur throughout the world. Free flying aquatic birds including ducks, geese, gulls and shorebirds are considered the principal reservoirs. AI infections in these species usually causes no signs of disease, but they have been implicated as the source of many AI outbreaks in domestic poultry throughout the world. Recent reports from Asia indicate that H5N1 subtype can become pathogenic to waterfowl.

Development of the Disease

Clinical signs may appear as soon as 3-5 days after viral exposure. Mortality rates vary widely depending on the pathogenicity of the virus, concurrent infections and environmental stress.

Clinical Signs

Signs in affected poultry flocks may range from unapparent infection to sudden death, and include any or all of the following:

- Depression
- Decreased feed and water consumption
- Decreased egg production
- Soft or misshapen eggs
- Respiratory signs (coughing and sneezing)
- Swollen heads and bluish combs
- Hemorrhages on internal organs, feet or legs
- Diarrhea
- Nervous disorders

Diagnosis

Clinical signs or serologic testing of blood samples provide evidence of the presence of virus. Definitive diagnosis is achieved by virus isolation and identification. Virus is usually recovered by sampling respiratory or digestive system tissues. Molecular diagnostic techniques can rapidly indicate the presence of virus in swab samples of the throat and vent.

Control and Eradication

State and Federal officials determine the actions if an AI virus is detected in birds. Laboratory testing determines the subtype and pathogenicity of the virus. While laboratory testing takes time, immediate control measures to contain the spread of virus may be necessary. Once the nature of the virus is understood, control measures may be lifted, or control and eradication measures may be warranted. Quarantine, flock depopulation and control of product movement may be used to halt the spread of infection. Vaccines are subtype specific and may sometimes be used to reduce virus shedding and limit spread after an outbreak has occurred.

Trade Restrictions

Interstate and International trade embargoes may be placed on affected states or countries during an AI outbreak.

Prevention

The best way to prevent an outbreak of AI is biosecurity to minimize the risk of transmitting disease. Because the virus can survive for long periods of time in organic material, the list of possible ways to spread disease is large and includes people, equipment and birds. The disease spreads between farms primarily through direct contact of healthy birds with respiratory secretions or fecal material from infected birds. The virus may be transmitted short distances through the air between birds.

The disease can also spread easily by indirect means. Contaminated material may be picked up on shoes and clothing, and carried from flock to flock. AI may be spread by personnel and equipment associated with live-haul, vaccination, insemination, manure hauling, feed delivery, rendering, egg collection, bird care and other activities that could carry virus from place to place.

The poultry industry and its allied industries bear the primary responsibility to defend against AI by implementing effective biosecurity measures. Poultry veterinarians and university extension agents can assist with the development of facility specific biosecurity plans. The following are some recommended biosecurity practices to safeguard poultry flocks from AI and other poultry diseases:

- Permit only essential workers and vehicles on the premises.
- Provide disposable coveralls, boots and head covering for visitors.
- Provide clean clothing and disinfection facilities for employees.
- Thoroughly clean and disinfect vehicles entering or leaving the premises.
- Avoid visiting other poultry operations.
- Do not allow other birds to be kept on the premises.
- Do not hire employees who own or associate with birds for any purpose.
- Provide biosecurity training to employees.
- Do not share equipment with other poultry facilities.
- Thoroughly clean and disinfect all equipment coming onto the facility.
- Remove weeds and other vegetation from around poultry houses to control rodents.
- Protect flocks from exposure to wild birds, rodents and insects.
- Prevent standing water accumulations that may be attractive to wild birds.
- Control movement associated with the disposal of mortality, litter and manure.
- Take diseased birds to a diagnostic lab for evaluation.

Sick Bird Hotline
(866) 922-2473

California Department of Food and Agriculture Animal Health and Food Safety Services Animal Health Branch

Headquarters	(916) 900-5002
Redding District	(530) 225-2140
Modesto District	(209) 491-9350
Tulare District	(559) 685-3500
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USDA-VS	(916) 854-3950; (877) 741-3690

http://www.cdfa.ca.gov/ahfss/animal_health/

http://www.cdfa.ca.gov/ahfss/Animal_Health/Avian_Health_Program.html