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Avian Advice

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Avian Influenza: A Potential Threat to Poultry Again This Fall

F. Dustan Clark[1], Terry Conger [2] and Kayleigh Moyle [3]

[1] Extension Veterinarian and Associate Director for Center of Excellence for Poultry Science University of Arkansas Division of Agriculture Arkansas Cooperative Extension Service

[2] Poultry Health Specialist/Epidemiologist SPRS District 4 USDA/APHIS/Veterinary Services

[3] Poultry Science, Graduate Student at University of Arkansas Center of Excellence for Poultry Science

Background and History:

Avian Influenza (AI) is a viral disease capable of causing varying degrees of illness and mortality in poultry. The disease was first recognized in Italy in 1878 and was first reported in the United States in 1924 in New York City. The older literature refers to Avian Influenza as "Fowl Plague. Costs can be devastating to producers since entire flocks can die shortly after infection with a highly virulent strain of Avian Influenza.

Recent Outbreak:

The recent outbreak of Avian Influenza, December 2014-June 2015, is the largest animal health emergency in the history of the United States and has affected poultry in 15 states. The disease outbreak has caused the death and destruction of over 48 million+ birds (commercial layer chickens, turkeys, game fowl, and small hobby chicken flocks) and it is estimated that the federal costs alone in disease control and indemnity will exceed 550 million US dollars. The US poultry industry has been severely affected by this outbreak from losses of poultry and eggs, quarantines, trade restrictions, bans, market losses, etc. The recent outbreak has caused a loss of approximately 10% of total US table egg chickens and 7.2% of the US turkey population.
Prior to this 2014-2015 outbreak the most costly AI outbreak in US history was the 1983-84 outbreak in Pennsylvania. That outbreak cost the industry an estimated $60 million to eradicate the disease and consumers about $349 million to replace the table eggs lost in the quarantine region. Costs associated with Avian Influenza outbreaks make it extremely important for the producer to be aware of the signs of the disease and take steps to prevent it.

Virus Description:

Avian Influenza is an RNA virus belonging to the Orthomyxoviridae family. There are three types of Influenza viruses: A, B, and C. Type A Influenza viruses are very widespread and capable of affecting many different animal and avian species. Avian Influenza is a type A Influenza virus. The B and C type Influenza viruses affect only people. There are many different subtypes of the Influenza type A virus. The virus has two types of glycoproteins that project from the surface coat of the virus. The two glycoproteins are called Hemaglutinin (H) and Neuraminidase (N). There are 16 different types of H glycoproteins (H1-H16) and nine different types of N glycoproteins (N1-N9). These H and N glycoproteins are used by poultry health professionals to distinguish one Avian Influenza virus strain from other types, such as H5N2, H5N7, H3N3, H5N8, etc. The recent Avian Influenza outbreak has involved two virus strains: H5N8 and H5N2. The H5N2 strain has been responsible for the vast majority of the infected birds.

The virus is also classified by pathogenicity -- the ability to cause disease in domestic chickens. There are two types of pathogenicity: low and high. The low pathogenic types of AI are usually mild infections of the gastrointestinal or respiratory tracts of the birds causing only mild symptoms. Any H and N combination can be a low pathogenic form of Avian Influenza. Only H5 and H7 types are recognized as highly pathogenic. These H5 and H7 virus types can also be low pathogenic but can mutate to become highly pathogenic types. Highly pathogenic AI causes severe clinical illness and high mortality; and spreads rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs with an associated mortality rate that can reach 90-100%; often within 48 hours. Since there can be viral mutations without warning and low pathogenic strains can change to high pathogenic ones both low pathogenic and high pathogenic H5 and H7 viruses are a concern. AI research and epidemiological studies reported at the July 2015 American Veterinary Medical Association convention in Boston, Massachusetts show that the current H5N2 outbreak was caused by a re-assorted form of AI virus. A re-assorted AI virus is one that is created when two or more AI viruses exchange genes during an infection thus creating a new or novel strain that has genes from each. The current H5N2 virus has 5 genes from the H5N8 strain from Europe/Asia and 3 genes from an unknown H N2 North American AI virus. It has been shown that the H5 gene of Eurasian H5N8 is from the Asian H5N1 strain isolated from a goose in China in 1996. That virus caused illness in birds and a few rare cases in humans. No H5 Influenza illness has been detected yet in the USA.

Disease Symptoms Diagnosis and Spread:

Avian Influenza has an incubation period of 3-7 days depending on the virus dose, poultry species infected, route of exposure, and several other factors. The symptoms exhibited by an infected bird are variable and depend on the pathogenicity of the virus. Some of the possible symptoms are: depression, diarrhea, dehydration, appetite loss, weight loss, huddling, a drop in egg production and respiratory symptoms (cough, sneeze, and sinusitis). The lesions that could be observed include: a bloody nasal discharge, facial swelling, and blue discoloration of the face, subcutaneous hemorrhages, tracheal inflammation, nasal inflammation and hemorrhages on the shanks and in the proventriculus. There are no acceptable or practical treatments for poultry infected with high pathogenic Avian Influenza.

Poultry found positive for the Avian Influenza virus are quarantined and destroyed to prevent spread to other flocks. Destruction of affected animals is the only viable method to control the spread of the disease.

The disease spreads from infected birds to non-infected birds via respiratory and gastrointestinal secretions. Susceptible birds can be exposed to respiratory or gastrointestinal secretions in numerous ways. Secretions can be spread on contaminated footwear, clothing, egg flats, equipment, cages, etc. In fact, Avian Influenza is most often spread from infected to non- infected flocks by people carrying the virus usually on their clothes or footwear. However, the virus can live for short periods on human skin or in human nasal passages. In addition, the virus can be shed by infected wild birds including migratory waterfowl (e.g. ducks and geese) or game birds, which show no clinical signs of the disease. The Avian Influenza virus has also been frequently isolated from clinically normal exotic birds. At moderate temperatures the virus can remain viable in organic materials for long periods of time and can survive indefinitely in frozen materials.

What to Do:

If you see illness in your flock or suspect a problem, get assistance immediately. Commercial flock owners should contact their service technician at the first signs of a problem so appropriate measures can be implemented. Hobby and small flock owners should contact their local veterinary practitioner, county Extension agent, Extension veterinarian, state animal regulatory agency, or state veterinarian for advice. A consistently followed and maintained appropriate Biosecurity program is a key tool in preventing introduction and/or spread of Avian Influenza or of any poultry disease.

Contact phone numbers for Arkansas:

F. Dustan Clark, DVM, Arkansas Extension Poultry Veterinarian.
fdclark@uark.edu • 479-957-4245
Terry Conger, DVM, Poultry Health /Epidemiologist.
Terry.H.Conger@aphis.usda.gov • 501- 224-9515
Arkansas State Veterinarian and Arkansas Livestock and Poultry Commission. info@alpc.ar.gov • 501-907-2400

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UofA DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

Co-Editor Karen Christensen, Associate Professor/ Extension Specialist

Co-Editor F. Dustan Clark, Extension Poultry Health Veterinarian