



BIOSECURITY AND PUBLIC HEALTH SERIES

TIMELY INFORMATION

Agriculture & Natural Resources

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Avian Influenza – Biosecurity and Public Health Concerns

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Avian Influenza has recently gained a great deal of public attention due to human disease outbreaks occurring in the Far East, Russia, Croatia, the Ukraine, Turkey and Iraq. Many of the cases involved individuals which had sustained close contact with chickens, ducks and turkeys which had previously become sick with influenza. Although limited in the actual number of human cases, the potential for the disease to pass into humans is of real concern to both public health and animal health specialists. The possibility of a pandemic (world-wide) outbreak of avian influenza in people cannot be discounted, although it is important for the public to keep the risk in perspective, particularly in the United States and other western nations, where poultry products primarily come from a carefully monitored integrated and regulated commercial industry.

Avian Influenza is a disease caused by a virus, which must live inside animal cells to replicate. The disease which results in humans differs primarily in its origin from the conventional influenza virus, which normally causes over 30,000 deaths in people each year in the United States. In the case of avian influenza, the virus originates in birds and undergoes modifications, thereby enabling it to infect humans. Fortunately, in the cases of Avian Influenza, the modifications that have occurred in the virus have not been sufficient to promote human to human transmission of the disease, thereby limiting the problem to only a few individuals who have had intimate contact with sick birds. If these modifications were to occur, enabling human to human transmission, the potential for a pandemic would increase significantly.

Avian influenza can be classified into two broad categories, 1) that which is confined to birds and 2) that which originate in birds and passes into people, either directly or indirectly. In understanding the disease, it is important to realize that influenza transmission to humans is not solely limited to poultry. Influenza occurs in numerous species of mammals and birds. Humans have acquired the disease from other species, most commonly from swine. In one

case a small outbreak of the disease actually occurred when the virus was passed into people from seals. Pandemics are not limited to being caused by avian influenza. Should a pandemic actually occur, it could be the result of animal to human transmission or be completely confined to humans. Of the two scenarios, the latter, human to human transmission is most likely, since significant changes are needed in the genetic makeup of animal-borne influenza viruses to be capable of passage into people. The likelihood of chicken to animal to person transmission is relatively small, since this would require several sequential genetic changes within the virus.

Should an avian influenza outbreak occur in the United States, it will likely be the result of an international traveler carrying the disease into the country from some other location where the disease is present, and then transmitting it to other people. Since commercial poultry is carefully monitored and generally isolated from large human populations, human disease is highly unlikely to originate from the poultry industry. The disease could, however, occur as a result of transmission to people through sick birds in small hobby flocks, since they are not tightly regulated or monitored by the government. In the United States, even this source of infection is less likely to occur than in other countries, since people are not generally housed closely with hobby poultry.

As mentioned earlier, influenza virus can be carried by any number of species. The reservoir for influenza is waterfowl, which carry the virus, but are not generally made sick. Although, details as to the means of transmission have not always been clear, waterfowl have been implicated in some of the recent outbreaks of avian influenza, which have necessitated massive depopulation of poultry. In most cases throughout the world, the disease remained largely confined to poultry. Because of this, poultry and migratory waterfowl must be kept apart. Water supplies for poultry must come from a well or city water. If it originates from a pond there is a good chance that migrating waterfowl may shed the virus into the water and thereby infect poultry.

Preventing transmission of avian influenza into commercial operations or hobby poultry does not end with protecting water supplies. Like all disease prevention strategies, stringent biosecurity measures go a long way toward preventing disaster.

Basic biosecurity rules include the following:

- Do not mix poultry with other species of birds
- Monitor and sanitize water sources and equipment
- Do not mix birds of different ages
- Maintain adequate housing to isolate poultry from other species of birds and animals
- Restrict access to poultry housing areas to essential workers and vehicles
- Provide clean clothing and disinfection facilities for employees
- Thoroughly clean and disinfect equipment and vehicles prior to exiting/entrance

- Never use borrowed equipment, which may have been present on other poultry growing properties
- Avoid visiting other poultry farms and personnel from other poultry growing or slaughter facilities, without first changing clothes and footwear
- Never visit live bird markets or slaughter facilities

[Source: Adapted from USDA, Program Aid No. 1836 _ High-Pathogenicity Avian Influenza]

Avian influenza occurs in poultry in two forms. The first, called Low Pathogenicity Avian Influenza (LPAI) looks like many respiratory diseases, which commonly occur in poultry. The birds become ill, exhibit respiratory signs like coughing and sneezing, but do not die quickly, or in large numbers. Often times, few if any birds die. Because of the difficulty in differentiating LPAI from other less serious respiratory diseases, it is imperative that sick birds showing respiratory distress be examined quickly by veterinary diagnostic personnel. LPAI is a significant issue as well because of the virus's ability to mutate into the more serious form of the disease, Highly Pathogenic Avian Influenza (HPAI). The hallmark of this form of the disease is the rapid death of large numbers of birds, many of which may show no other signs of sickness.

Clinical Signs for HPAI may include any of the following:

- Sudden death with no other apparent clinical sign
- Lack of energy and appetite
- Decreased egg production, soft-shelled or misshapen eggs in laying flocks
- Swelling of the head, eyelids, comb, wattles and hocks
- Purple coloration of the wattles, combs and legs
- Mucous discharge from nasal cavities
- Coughing and/or sneezing
- Incoordination
- Diarrhea

[Source: Adapted from USDA, Program Aid No. 1836 _ High-Pathogenicity Avian Influenza]

Avian Influenza is a serious disease capable of causing large numbers of deaths in poultry and causing serious economic consequences. Although, the disease has caused over one hundred deaths in humans throughout the world, the incidence of the disease is still low, compared to the number of people in other countries that have been exposed to live poultry. In the United States, although the disease could affect people, the organization and surveillance of the commercial poultry industry minimize the threat. Currently, the industry and government are working hard to prevent the disease from occurring here. To that end, it is important for the consumer to realize that the risk of acquiring the disease from poultry products is not a significant issue for concern since commercial practices in preparing poultry meat, followed by proper cooking reduce the chance of disease transmission to negligible levels.