

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Avian Influenza

Avian influenza (AI) is viral disease in domestic poultry and other bird species caused by influenza A virus. AI viruses do not usually infect humans, but sporadic individual or small clusters of limited human cases have occurred. Although these cases are rare, health experts are concerned that AI viruses could adapt to infect humans and spread easily through person-to-person contact. This type of adaptation could lead to the next human influenza pandemic. In Montana, the first known case of HPAI (H5N2) was found in a captive Gyrfalcon in Columbia Falls in March 2015. In April 2015, H5N2 was detected in a back yard flock of chickens in Judith Basin County. No human cases associated with either of these incidents were identified. In the United States (US), two cases (2002, 2003) of low pathogenic avian influenza (LPAI) H7N2 virus have been reported in humans and no human cases of HPAI virus were identified. In this issue of Montana One Health, we review important details of avian influenza and the human health implications of avian influenza viruses.

Avian Health

Avian influenza is a highly contagious respiratory disease in bird species. AI viruses are classified as highly pathogenic avian influenza (HPAI) or low pathogenicity avian influenza (LPAI) based molecular makeup and virulence for chickens using an intravenous pathogenicity test. While most AI viruses are of low pathogenicity and primarily cause respiratory or reproductive disease with low mortality rates, some AI viruses are highly pathogenic for chickens, turkeys, and other related gallinaceous birds. HPAI viruses can produce a severe disease with high morbidity and mortality in chickens and other domestic birds.

More than 100 species of wild birds, including some species of waterfowl and shorebirds, are natural hosts for AI viruses. These viruses are generally LPAI virus strains and infected birds often do not show obvious signs of illness. However, these carrier animals can still shed AI viruses and potentially introduce the virus to domestic bird populations. Infected birds excrete the virus in their feces and in secretions from their nose, mouth, and eyes. Virus transmission between infected birds and healthy birds occurs primarily through direct bird-to-bird contact, indirect contact with contaminated equipment and materials, and contact with infected fecal material. In enclosed areas, like poultry barns, HPAI can spread through aerosolization of the virus.

The incubation period of AI in birds is variable and ranges from a few days in individuals to two weeks in a flock. The primary clinical signs of LPAI in bird species are respiratory symptoms (coughing, sneezing, ocular and nasal discharge, and swollen infraorbital sinuses in poultry), sinusitis, congestion, and trachea and lung

inflammation. Decreased egg production or fertility might also occur. Bird mortality from LPAI is low unless there is a secondary infection. HPAI is typically a severe disease with high mortality (as high as 90%–100% in a few days). HPAI can cause sudden death, lack of energy with ruffled feathers, lack of appetite, decreased egg production, soft-shelled egg or misshapen eggs, swelling, purple discoloration, respiratory symptoms, lack of coordination, and greenish diarrhea. AI viruses can be detected in oropharyngeal, tracheal, and/or cloacal swabs from live birds. If HPAI is suspected, contact the Department of Livestock for appropriate testing procedures.

No treatment exists for avian influenza although antimicrobials might be necessary to treat secondary bacterial infection. Increasing poultry housing temperatures may also reduce morbidity and mortality. AI vaccines can prevent symptoms and death and might reduce viral replication and shedding. However, vaccinations could potentially impact American poultry exports overseas. The state veterinarian must approve the use of these licensed vaccines. The United States Department of Agriculture (USDA) must approve the use of H5 and H7 AI vaccines.

Both poultry producers and back yard flock owners can reduce the risk of an AI outbreak by utilizing good biosecurity practices. AI viruses are sensitive to most disinfectants/detergents and inactivated by heat and drying.

Avian influenza has the potential to spread rapidly in flocks and an outbreak can have significant impacts on producers, international trade, and the economy. Report all suspected poultry AI virus infections immediately to the Montana Department of Livestock.

Human Health

While the health risk posed to humans by HPAI viruses is low in the US, there have been rare human HPAI cases via transmission from birds. Transmission can take place when humans are exposed to contaminated respiratory droplets or dust, or when a person touches something contaminated by the virus and then touches their mouth, eyes, or nose. Some human cases reported no direct contact with infected bird or contaminated surfaces. Avian influenza can also spread to humans through an intermediate host, like swine. Pigs are susceptible to infection with both mammalian and avian influenza. Three human pandemics of influenza are attributable to viruses with genes from both human and avian influenza.

The primary risk factor for infection with AI virus appears to be direct close, extended, and unprotected contact with ill poultry (alive or dead) or contaminated surfaces and environments. No evidence exists of people becoming infected from consuming properly prepared poultry or

eggs. Recommended personal protective equipment for people in contact with potentially infected poultry includes: properly-fitted safety goggles, disposable gloves, boots, NIOSH-certified respirator (N95 or higher), and disposable fluid-resistant coveralls.

The severity of illness in humans varies from mild to severe. A LPAI infection in humans can range from conjunctivitis to an influenza-like illness or pneumonia. A HPAI infection can cause the same illnesses as an LPAI infection, but can also lead to severe respiratory illness with multi-organ disease.

Diagnosis of avian influenza virus requires testing of a respiratory specimen. Specimens should be collected as early in the illness as possible. The Centers for Disease Control and Prevention (CDC) currently recommends illness caused by avian influenza viruses be treated with antivirals (oseltamivir, peramivir, or zanamivir).

Avian Influenza Key Points

Human Health

- Clinicians should continue to read messages from the Health Alert Network (HAN) to stay abreast of any potential outbreaks of avian influenza.
- Once public health authorities have identified a heightened risk of avian influenza virus transmission, clinicians should consider the possibility of avian influenza virus infection in persons exhibiting symptoms of severe respiratory illness who have appropriate travel or exposure history.
- If patients meet the above criteria, consult with local public health authorities regarding appropriate testing and reporting requirements.

Avian Health

- Animal health authorities should encourage producers, exhibitors, and animal caretakers to practice biosecurity measures (see USDA's Animal and Plant Health Inspection Service "Defend the Flock" and "Biosecurity for Birds" campaign materials for more information on biosecurity).
- Bird owners should call their veterinarian if any of their birds exhibit signs of illness.
- Persons handling sick or dead animals should wear proper personal protective equipment.
- Veterinarians should immediately report any suspected AI to the Montana Department of Livestock at 406-444-2043.

References available on web version. Visit <http://www.dphhs.mt.gov/publichealth/publications.shtm>!

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