

Technical Section I: Poultry Worker Health

DRAFT

Executive Summary

The MDH's response to an AI (AI) outbreak in poultry has two objectives:

1. To protect the health of poultry workers and others in contact with infected birds, and
2. To minimize the likely hood of the emergence of a new strain of AI with the potential for human-to-human transmission.

In order to prevent the emergence of a new strain, under certain circumstances the MDH will promote vaccination of poultry workers, hoping to prevent co-infections with both AI and human influenza and to reduce opportunities for the virus to mutate to a strain that is highly infectious in humans and easily spreads person to person.

In domestic poultry, infections with AI viruses cause two main forms of disease:

1. Low-pathogenic (low-path) AI:
 - Is identified in Minnesota turkey flocks each year through routine surveillance.
 - Rarely causes symptoms in the birds.
 - Poses little public health risk.
2. High-pathogenic (high-path) AI:
 - Has never occurred in Minnesota.
 - May be devastating to flocks.
 - May be infectious to people in contact with flocks.

Influenza A viruses have 16 H subtypes and 9 N subtypes. Only viruses of the H5 and H7 subtypes are known to cause high-path AI (although most H5 and H7 AI viruses are low-path). Typically, H5 and H7 AI viruses are introduced to poultry in their low-pathogenic form. When allowed to circulate in poultry populations, the virus can mutate within a few weeks or months into a highly pathogenic form. Because of this, the presence of an H5 or H7 virus in poultry is cause for concern, even if it is a low-path strain. In Minnesota, most influenza introductions in domestic poultry are caused by H1 or H3 strains, but there have been infrequent introductions of low-path H5 (last in 1998) and low-path H7 (last in 1994).

Minnesota is part of the Prairie Pothole Breeding Region for wild waterfowl and is a staging area for the fall migration. This results in a high density of susceptible juvenile waterfowl from July through November that naturally undergoes multiple infections with AI viruses. Much of the state's turkey production occurs in the same areas, and as a result of contact between wild birds and turkeys, there have been annual low-path AI introductions (see **Attachment S**).

Approximately 10 years ago, the poultry industry essentially eliminated range-turkey production in favor of confinement housing, which reduced the number of low-path AI introductions dramatically. However, turkeys may also be infected with influenza virus strains carried by swine. Many recent low-path AI introductions in turkeys in the state have been traced to contact with swine.

The voluntary Minnesota Cooperative AI Control Program was started in 1984 by the Minnesota Turkey Grower's Association, the University of Minnesota, and the Board of Animal Health (BAH) to identify, control, and eliminate introductions of low-path AI. The program includes slaughter plant surveillance of every turkey flock marketed; voluntary isolation and quarantine, reporting to other industry personnel to enhance biosecurity throughout the industry, vaccination where possible, and controlled marketing after birds have recovered from the infection and have

ceased to shed the virus. There are 75,000 samples tested annually for AI at the Minnesota Poultry Testing Laboratory in Willmar, Minnesota, with results available in 24-48 hours.

In 20 years, no AI outbreak has lasted more than 6 months and high-path AI has never emerged from 16 introductions of low-path H5 or H7. Although there have been hundreds of flocks of turkeys with low-path AI in Minnesota, there has never been spread to a neighboring state. The BAH is currently expanding its surveillance to include chickens and non-commercial poultry.

Planning Activities

Rationale

There are three distinct types of AI outbreaks in poultry requiring different responses from the MDH:

1. Low-path AI (non H5/H7) introductions into Minnesota poultry flocks have been controlled by the poultry industry through management controls and extensive surveillance for decades and pose little public health risk.
2. H5/H7 low-path AI may rarely cause conjunctivitis or mild respiratory symptoms among poultry workers and others in contact with infected birds.
3. High-path AI has caused serious influenza with a high case-fatality rate among persons in close contact with infected birds.
 - In Minnesota, because of the structure of the industry, the nature of the disease, and a rapid, aggressive eradication response by BAH, MDA, and USDA APHIS VS, people exposed to high-path infected birds before identification of the agent would probably number fewer than 100.
 - A high-path infected flock would be unlikely to be marketed because the morbidity rate in the birds would be near 100% with >90% mortality possible within 72 hours, limiting the number of people exposed to the infected birds.
 - Potentially exposed people would include the relatively small number of poultry industry workers in contact with growing birds, breeder flocks, or table egg birds (see Attachment Q), first responder veterinarians, state and federal veterinarians, and veterinary diagnostic laboratory personnel.

In Minnesota, surveillance for AI in poultry is conducted by the poultry industry, the BAH and the University of Minnesota. Testing for AI in poultry is performed at the Minnesota Poultry Testing Laboratory in Willmar, Minnesota, while strain typing is confirmed at the National Veterinary Services Laboratory in Ames, Iowa.

Should an introduction of low-path H5/H7 or high-path AI occur in Minnesota poultry, our animal health agency partners would work with the poultry industry to eliminate the virus, using methods appropriate for the strain of AI and the situation. The MDH will be responsible for protecting the health of poultry workers and others in contact with infected birds. Risk communication would be a shared function between the MDH and our animal agency partners.

Actions

Low-path (non H5/H7) Introduction into Minnesota Poultry
1. Routine surveillance for cases of conjunctivitis or respiratory illness among residents of the area.
Low-path (H5/H7) Introduction into Minnesota Poultry
1. Participate with the BAH and other partners to implement the Minnesota H5/H7 Low Pathogenic Avian Influenza Response Plan.
2. Recommend basic PPE and infection control precautions for poultry workers and others with direct contact with the infected birds or contaminated environment.
3. Facilitate voluntary vaccination of workers with current human influenza vaccine.
4. Provide information about AI and MDH contact information to poultry workers, asking them to report conjunctivitis or respiratory symptoms to MDH.
High-path (new strain) Outbreak in Minnesota Poultry
1. Coordinate with other state agencies involved in implementing the Minnesota Highly Contagious Animal Disease Response Plan.
2. Make recommendations and provide technical assistance for PPE and infection control precautions to poultry workers, veterinary diagnostic laboratory personnel, and regulatory personnel involved in disease control and eradication activities, following current published CDC (see Attachment T) and U.S. Department of Labor Occupational Safety and Health Administration (OSHA) guidelines (see Attachment U).
3. Facilitate voluntary vaccination of workers with current human influenza vaccine.
4. Facilitate distribution of antiviral drugs as indicated.
5. Provide information about AI and the MDH contact information to poultry workers, asking them to report conjunctivitis or respiratory symptoms. In addition, the MDH will initiate active surveillance by monitoring the disease status of exposed workers by telephone or in person.
6. Impose quarantine of exposed workers if necessary.

Roles and Responsibilities

State and local roles and responsibilities are identified below. Regional roles are also identified when applicable. This is not an exhaustive list. Furthermore, although roles and responsibilities are listed, the MDH recognizes that the infrastructure to support these planning efforts is evolving and may not yet be in place.

State			
	Roles and responsibilities	Coordinating entity	Explanation
Routine Surveillance	Conduct routine surveillance for cases of conjunctivitis or respiratory illness among residents of the county.	Primary MDH ADIC Contributor MDH ITIH	BAH reports county and type of poultry operation to MDH. Surveillance only for MDH and LPH unless human illness develops
Emergency	Participate in the Emergency Management Committee headed by BAH.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control LPH	
PPE and Infection Control	Recommends basic personal protective equipment and infection control precautions for poultry workers and others with direct contact with the infected birds or contaminated environment.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control LPH	

State			
	Roles and responsibilities	Coordinating entity	Explanation
PPE and Infection Control	Recommend and provide technical assistance for personal protective equipment and infection control precautions to poultry workers, veterinary diagnostic laboratory personnel, and regulatory personnel involved in disease control and eradication activities, following current published CDC (see Attachment T) and U.S. Department of Labor Occupational Safety and Health Administration (OSHA) guidelines (see Attachment U).	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control, MDH clinical team LPH	MDH is lead agency for human health issues. MDH plays an active role (on site) implementing PPE and IC precautions, recommending antiviral drugs if indicated, initiating active surveillance for respiratory symptoms among workers, quarantining as deemed necessary.
Fit Testing	Trains and assists LPH and poultry industry health officials in fit testing N95 masks for managers and workers.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control LPH	
Vaccination	Facilitates voluntary vaccination of workers with current human influenza vaccine.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control LPH	

State			
	Roles and responsibilities	Coordinating entity	Explanation
Antivirals	Facilitates distribution of antiviral drugs as indicated.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control, MDH clinical team LPH	
Information Sharing	Provide information about AI and MDH contact information to poultry workers, asking them to report conjunctivitis or respiratory symptoms.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control LPH	BAH is lead agency. MDH plays an advisory role-recommending PPE and infection control precautions.
Coordination	Coordinates with other state agencies involved in implementing the Minnesota Highly Contagious Animal Disease Response Plan.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control, MDH clinical team LPH	MDH is lead agency for human health issues. MDH plays an active role (on site) advising on PPE and IC precautions, recommending antiviral drugs if indicated, initiating active surveillance for respiratory symptoms among workers, quarantining as deemed necessary.
Quarantine	May impose quarantine of exposed workers as indicated.	Primary MDH ADIC Contributor MDH ITIH, MDH Infection Control, MDH clinical team LPH	

Local			
	Roles and responsibilities	Coordinating entity	Explanation
Training	Work with poultry industry health officials to educate poultry workers about AI and infection control precautions, and in demonstrating proper use of personal protective equipment (PPE).	Primary LPH Contributor MDH ITIH MDH Infection Control MDH clinical team	LPH would coordinate with ITIH to administer human influenza vaccine to willing unvaccinated workers.
Dispensing and Monitoring	Assist in dispensing antivirals, monitoring symptoms by telephone or in person (if LPH has opted to conduct monitoring; otherwise MDH), and providing essential services to quarantined poultry workers as needed.	Primary LPH Contributor MDH ITIH MDH Infection Control MDH clinical team	