

## Avian Influenza Biosecurity for Small Flock Owners

Division of Animal Sciences

Avian influenza (bird flu) is an infectious respiratory disease caused by a virus. It readily grows in most bird species, including those that are of commercial importance, such as chickens, turkeys and ducks. The major concern now is that a highly pathogenic strain (H5N1) has also been shown to transmit to humans and has the potential to be fatal. Good biosecurity practices should help reduce the risk of spreading the disease if the virus reaches the United States.

### Biosecurity

The term *biosecurity* refers to maintaining a farm or facility in a state of cleanliness to protect against the infiltration of biological disease agents. Good biosecurity practices should be in place at all times, but biosecurity has become a greater concern on U.S. farms since the outbreak of bird flu outside the United States. In general, biosecurity in a poultry operation depends on isolating the birds.

### How the disease occurs

Several key elements must be in place for a disease such as bird flu to develop and spread (see Figure 1):

- Susceptible host (e.g., a bird)
- Environmental stress (e.g., poor conditions weaken birds' immune system)
- Reservoir for the disease (e.g., an infected duck)
- Infectious agent (e.g., an avian influenza virus)
- Vector, or means for transmission (e.g., virus in bird feces carried from farm to farm by workers)

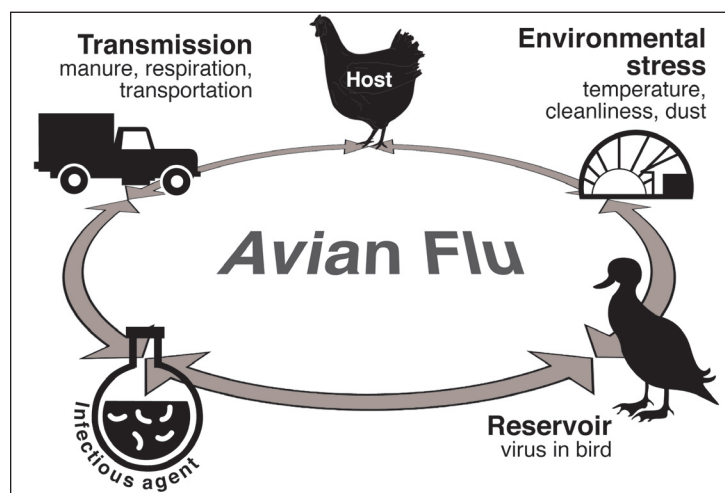


Figure 1. Bird flu occurs through the interaction of environmental and biological conditions.

### Susceptible host

All domestic species of poultry are susceptible to bird flu. It is easier to protect commercial birds kept in houses than free-range birds, which have outdoor access. However, an outbreak in a poultry house would be especially serious because of the large numbers and close confinement of the birds.

### Infectious agent

The infectious agent for bird flu is a virus.

Various strains of the virus have been reported and are categorized according to their pathogenicity, or ability to produce disease. The low pathogen strains are fairly common in wild waterfowl but pose relatively low risk. Although health authorities will still put control measures in place for these strains, they do not affect humans. The high pathogen strains are of much greater concern and have occasionally been associated with transmission to humans. The flu outbreak in the early part of last century was associated with a bird flu virus. The H5N1 strain is of current concern because of its reported transmission to humans who have been in close contact with infected birds.

### Disease reservoir

Waterfowl such as ducks act as a reservoir, or storage system, for the virus. Ducks or geese may contract the disease and either recover or survive for long periods of time while shedding virus as they move about. Chickens and turkeys that contract a high pathogen

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strain generally exhibit a rapid onset of symptoms and high mortality rates. The virus will “burn out” quickly in these birds if they are isolated.

### Transmission

*Transmission* refers to ways in which the bird flu virus spreads. The most likely vector, or means of transmission, for bird flu is manure from infected birds or the introduction of infected birds into a flock. In a closed group of birds, the virus spreads through respiration.

### Environmental stress

Other conditions being equal, disease is more likely to spread in a flock where environmental factors weaken the birds’ immune systems. Environmental conditions that can lead to disease include temperature extremes, dust, poor sanitation and crowding.

### Biosecurity on the farm

Biosecurity is generally of less concern for the small flock owner than for the commercial producer. However, if bird flu reaches the United States, both large and small producers will need to become aware of biosecurity procedures. In some locations, outdoor poultry production has been banned when flu was found in the area. The objective of biosecurity practices is to prevent anything that can carry a disease-causing organism from coming in contact with the birds.

In most cases, the portal of entry for the flu virus into a flock is through manure that is brought onto the farm. This can come from wild birds roosting on the farm, workers with infected birds at home, trading of birds, live bird markets and shows, or travel from farm to farm by people or vehicles.

Protective measures for several possible means of disease transmission are discussed below:

**People:** People are a likely source of infection. Poultry producers should avoid birds other than their own. They should change clothes or wear farm coveralls when working around birds. Change boots when entering and leaving the farm. Use disinfectant footbaths and change disinfectant daily. Screen visitors for recent poultry contact.

**Vehicles:** Vehicular traffic from farm to farm should be avoided. Vehicles that must travel between farms should be power washed and then disinfected. A disinfectant bath may be ineffective if the vehicle is not clean or the disinfectant is not changed at least daily. If the disinfectant looks dirty, it is probably ineffective.

**Wild birds:** Wild birds must be kept from farms by overhead fences and coverings over house openings.

**Other:** Anything that can carry the infectious agent (bird flu virus) onto the farm must be stopped. Control

points (such as boot changes) must be used at all times to be effective. It is important to follow common sense in an isolation program and to guard against the tendency to relax efforts over time.

### Proper environment

Good nutrition, potable water and proper housing should be available for poultry at all times. Poor environmental conditions predispose birds to disease. Proper sanitation begins by maintaining a clean facility. Diseases tend to recur when the cycle of disease is not broken. Birds are the best reservoir and should thus be depopulated periodically to break the disease cycle.

### Proper cleanup on the farm

Basic biosecurity indicates that periodic depopulation and cleanup on the farm should occur. Remove all organic matter before wash down and disinfection. Manure from infected houses should be buried, composted or burned. Allow a two-week interval between flocks to break the disease cycle. Commercial disinfectants or dilute bleach solutions can be used for cleanup of equipment and inside buildings. Always follow directions and use proper protective equipment with these chemicals. Dry, sunny conditions will help to disinfect yards. Tilling of the yard may help bring disease organisms to the surface to be killed by sunlight. In the event of a bird flu outbreak in your area, authorities will determine proper control procedures.

### Frequently asked questions

#### What is the most important part of biosecurity for small-scale poultry producers?

Maintaining attention to detail and a proper attitude toward the need for biosecurity is essential for all poultry producers. Biosecurity is simple if one has the right mindset to analyze the risks of carrying the disease and the means to avoid those risks. Determining appropriate procedures and then following them will greatly reduce the risk of spreading any disease.

#### Are any disinfectants effective in the presence of organic matter such as manure?

Most commonly used disinfectants do not work well in the presence of organic matter. Most disinfectants work only on a relatively clean surface. Boots, for instance, should be thoroughly cleaned before disinfection. Yards where poultry are kept can be allowed time to dry so that sunlight can act as a disinfectant. Only harsh chemicals can disinfect dirt or manure, and these should be used with extreme caution by qualified individuals.