



Avian Influenza and Biosecurity

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It has been a little bit over 2 years since the beginning of the largest Highly Pathogenic Avian Influenza (HPAI) outbreak in North America (NA). The virus that caused such outbreak was genetically identified to be a mix between North American and Eurasian Avian Influenza (AI) viruses. Wild migratory birds are thought to play a prominent role in bringing that virus to NA. While the last case of commercial poultry from that outbreak was reported in late spring of 2015, AI continues to be a threat to the poultry population (commercial and noncommercial) in NA. The clearest evidence of that threat materialized in another HPAI outbreak in January of 2016 that affected the commercial poultry industry. Different from 2015 outbreak, the 2016 outbreak evolved from a purely NA virus. It also seems that the Eurasian virus did not disappear from NA; as it has been isolated from wild mallard ducks in two different occasions from two different locations (Alaska, August and Montana, December) in 2016.

As mentioned before, the 2015 Influenza virus that resulted in the death of close to 50 million birds in the United States was genetically related to an influenza virus that circulated in Asia and Europe throughout 2014. Interestingly, during 2016 a very similar virus is currently very active throughout Asia, Europe and Africa. According to National Wildlife Health Center report, that was issued in December 2016 “... *[this] virus was reported in wild birds in Russia (during summer) and India (during autumn). Additional outbreaks have subsequently been reported in a growing list of European countries (Austria, Croatia, Denmark, Finland, France, Germany, Hungary, the Netherlands, Poland, Romania, Serbia, Sweden, and Switzerland) and three countries in the Middle East (Egypt, Israel and Iran). Infected domestic animals have included chickens, ducks, and turkeys; affected wild birds have included at least 16 species of waterfowl, five species of gulls and terns, four species of raptors, two species of grebes, as well as a coot, cormorant, crow, heron, and moorhen*”.

It is important to note that to date, the domestic poultry population (commercial and noncommercial) in the United States is still clear of this virus. However, this situation in Europe and Asia is frighteningly similar to what happened in 2014. It is also important to note that in spite of being deadly to poultry, this group of influenza viruses has **NOT** been reported to infect humans, neither in the United States nor in other parts of the world.

While surveillance and quick diagnosis are essential tools to detect the virus and limit the spread of the disease and eventually control the outbreak, it's the **BIOSECURITY** efforts that will prevent the infection from reaching your flock, whether it is commercial or noncommercial. Biosecurity can be defined as “*the sound sanitary practices that are used to stop the infectious agent from reaching the host*”. Infectious agents are mostly microscopic in nature (cannot be seen by the naked eye). That means that it is very difficult to detect their movement and transmission from one place to another or from one individual to another. So the only option we have to stop their transmission is to put barriers in the face of

these microbes to protect our poultry flocks, even though we can't see them. In case of Avian Influenza and other microscopic infectious disease agents, these "biosecurity" barriers can be physical or chemical. Examples of physical barriers include, fences, gates, enclosed poultry houses, or even washing and cleaning. On the other hand, chemical barriers include disinfectants and detergents that are used to kill these microbes.

Before understanding biosecurity practices and the logic behind them, one must understand the dynamics of disease transmission. Infectious diseases in bird populations can be transmitted by two main ways:

1. Direct transmission, which means the infectious agents are transmitted through direct physical contact between infected and uninfected susceptible individuals.
2. Indirect transmission, which means the infectious agents are transmitted through indirect transportation vehicles to reach the susceptible individuals. In case of diseases that affect birds including avian influenza, the indirect transportation vehicles could include:
 - Human
 - Domestic animals including pets
 - Wild animals including varmints, rodents and insects
 - Physical objects including equipment
 - Feed
 - Water
 - Environments including shared pastures, water ponds or even air.

Accordingly, we have to tailor our biosecurity practices "barriers" to stop both direct and indirect transmission.

1. Practices that aim to prevent direct transmission.
 - Avoid contact between your flock and other birds, wild, domestic or otherwise.
 - Prevent your birds from mixing with other poultry or wild birds. Mixing of birds often happens around open water bodies and in open pasture.
 - Whenever possible prevent mixing between species within the same flock, and between multiple ages within the same species.
 - Try to acquire birds from National Poultry Improvement Plan (NPIP) disease free sources.
 - If you bring new birds to your flock, quarantine the new birds for 1 – 3 weeks before mixing with the rest of the flock.
 - If you show birds, attend fairs or perform any activity where birds from different places come together in one place, quarantine the birds for 1 – 3 weeks before mixing back with the rest of the flock.
2. Practices that aim to prevent indirect transmission.
 - It is highly recommended **NOT** to bring any visitors to your bird flock. They could be carriers of diseases on their cloths, their shoes, on their hands or any objects they bring with them.

- It's recommended to have specific cloths and shoes dedicated to working with your birds.
- Additionally, using disposable coveralls, gloves and shoe covers are highly recommended. They are relatively inexpensive, easy to dispose of and efficient in controlling the infection.
- Hands are the number one suspect when it comes to disease transmission. So, wash your hands before and after handling your birds, their feed or their water.
- Wash your hands before and after handling any equipment, bedding material housing material on any object that comes in contact with the birds.
- Hand sanitizing stations (hand sanitizing gels or foams) should be in place and used every time the poultry house is entered or exited.
- Similarly, boots and foot wear play a very prominent role in transmitting diseases. Footbaths with freshly changed disinfectants (changed daily) should be in place and used every time the poultry house is entered or exited.
- In this link (<http://www.cfsph.iastate.edu/Disinfection/Assets/Disinfection101.pdf>) a very useful document by the center for food security & public health from the Iowa State University summarizing available disinfectants. Phenols (on page 13 of the document) are one of the few chemicals that can maintain its activity in hard water and organic matter. It's probably one of the most suitable choices to be used in footbaths.
- Don't bring your pets or allow them access to your birds.
- It is essential to house the birds in animal proof/bird proof houses.
- It is very important to have effective rodent and insect control program. Rodents and insects are notorious for transmitting not only poultry diseases but also human disease.
- Equipment, bedding material housing material on any object that comes in contact with the birds should be thoroughly cleaned and properly disinfected before using with your birds.
- Acquire your feed from trusted sources and properly store the feed in dry, cool and clean place, shielded from access by other birds and animals particularly rodents.
- Drinking water for birds should be the same quality as drinking water for human. Surface water from rivers, ponds or puddles is particularly dangerous as it often contains infectious disease agents from migratory wild birds.
- If possible, try to house your birds at a distance (1/2 mile) away from other poultry and wild bird gathering areas.

These practices should be adopted by anyone who owns, grows or handles poultry. They also should be implemented in all times and in all situations. Obviously, different farms and different poultry houses whether they are commercial or noncommercial can adopt different ways to implement these practices. While you are using the concepts discussed in this article to design your own biosecurity program to fit your own situation keep the following goal in mind:

“On one hand, there is a worst case scenario when it comes to biosecurity, and that is a mixed species, mixed aged poultry flock that comingles with wild birds and other poultry flocks. On the other hand, there is the best case scenario which is single species, single age poultry flock, all-in-all-out, shower-in-shower-out facility. So, even if you can't be in the best case scenario, you should do everything in

your powers to be as close as possible to the best case scenario and you should do everything in your powers to be as far as possible from the worst case scenario. When it comes to biosecurity, never say there is nothing that I can do to protect my birds, there is always something to do to improve your situation”.

The Link below is updated daily for all the latest detections in the USA.

<https://content.govdelivery.com/accounts/USDAAPHIS/bulletins/17f3c54>

In the link below is additional information about the history of this influenza outbreak.

https://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_2016-08_HPAI_Update.pdf

It also offers recommendations and additional resources regarding safe handling of wild birds.

Finally, if you experience sudden disease signs or sudden mortality in your flock, please contact:

Animal Disease Diagnostic Laboratory
8995 East Main Street
Reynoldsburg, OH 43068-3399
Phone: (614) 728-6220
Email: animal@agri.ohio.gov

OR

Ohio Poultry Association
Phone: (614) 882-6111
Email: info@ohiopoultry.org

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