SPECIAL TOPIC

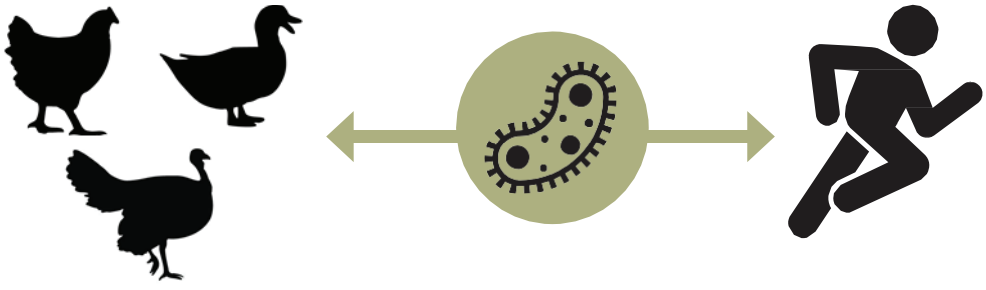
Poultry Zoonotic Disease Risks and Prevention

by Jacqueline Nolting, MS, PhD Veterinary Preventive Medicine, The Ohio State University and Andrew S. Bowman, MS, DVM, PhD, ACVPM, Veterinary Preventive Medicine, The Ohio State University

Diseases commonly spread between birds, and some also spread between poultry and humans. As a responsible livestock owner, you can take measures to reduce the spread of bird-to-bird and bird-to-human diseases.

What Is a Zoonotic Disease?

A zoonotic disease is one that can be spread between animals and people. Many diseases causing illness in humans come from animals. Viruses, bacteria, fungi, and parasites can cause zoonotic diseases. Thus there are various levels of prevention measures and treatments.



Icons from The Noun Project: S, germ by Maxim Kulikov, man running by Mungang Kim.

How Do Diseases Spread?

Infectious diseases spread in a variety of ways:
1) through the air; 2) from direct or indirect contact with another person or animal, soiled objects, skin or mucous membrane, saliva, urine, blood, and body secretions; and 3) through contaminated food and water.

Direct contact occurs when there is physical interaction between an infected person or animal and a susceptible person or animal.

Indirect contact occurs when there is no direct contact between a person and an animal. This contact occurs when a susceptible person or animal is exposed to contaminated air (aerosol transmission), objects (fomites), fecal-oral matter, or insects (vector-borne).

Sneezing and coughing can result in indirect airborne transmission.

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Ways zoonotic diseases are transmitted

Airborne droplets from the nose and throat

Some infections are spread when an infected person/animal sneezes or coughs out tiny airborne droplets. The droplets in the air may be breathed in directly by another person or animal or enter another person or animal indirectly through contact with surfaces or objects with the droplets on them.

Example of airborne disease:

- Influenza
- Avian tuberculosis
- Ornithosis

Fecal-oral transmission

Some infections are spread when microscopic amounts of feces from an infected person or animal with or without signs of disease (a carrier) are taken in by another person or animal by mouth. The feces may be passed directly from soiled hands to the mouth or indirectly by way of objects, surfaces, food, or water soiled with feces.

Examples of diseases spread from feces:

- Salmonellosis
- Campylobacteriosis

Contact with skin or mucous membrane (lining of nose and mouth)

Some infections are spread directly when skin or mucous membrane comes into contact with other skin or mucous membrane. Infections are spread indirectly when skin or mucous membrane comes in contact with contaminated objects or surfaces.

Examples of diseases spread by skin or mucous membrane contact:

- Erysipelas

Disease Transmission Prevention

Understanding how diseases spread, as outlined above, is critical in preventing them. Prevention strategies include biosecurity, proper hand hygiene, and the use of personal protective equipment.

What is biosecurity?

Biosecurity is the protection of agricultural animals from any type of infectious agent—viral, bacterial, fungal, or parasitic.

Examples of biosecurity measures:

- Do not have contact with your birds if you have been in contact with other poultry in the past 24 hours.
- Limit visitors to your poultry house. Be sure visitors are wearing clean boots and have not had poultry exposure in the past 24 hours.
- Limit the access of rodents and other wildlife in your poultry house.
- Do not enter the poultry house if you are ill. Stay out of the poultry house until your clinical signs have subsided and you are fever-free for at least 24 hours.
- Quarantine animals arriving at the farm for 7 days. Feed and care for existing animals before new or returning animals.
- Do not share animal care or manure hauling equipment.
- Clean and disinfect all equipment between uses, including feeders, and waterers.

Photo: Shutterstock

Direct contact can be avoided with the use of personal protective equipment (PPE) like gloves.

What is proper hand hygiene?

Hand washing is the most effective method to reduce the spread of disease by direct or oral routes. To reduce the spread of zoonotic disease between you and your birds, properly wash your hands before and after touching animals or animal husbandry items.

Wash your hands after being in a barn or trailer too, even if you didn't touch a bird. Objects such as gates can serve as fomites for disease.

Lung Association, http://sct.poumon.ca/protect-protegez/germs-microbes_e.php

Follow these steps when washing your hands.

What is personal protective equipment?

Personal protective equipment, or PPE, is items used to protect you from contact with agents that cause disease. You should consider wearing PPE when caring for poultry, especially when they are ill.

These are common types of PPE used in a poultry houses:	
	**Rubber boots** protect your feet from manure and moisture. They are also easy to clean and disinfect.
	**Gloves** protect against infectious agents entering the body through small cuts.
	**Protective clothing** protects against direct contact with infectious agents.
	**Face masks** protect from inhaling airborne droplets.

Icons from The Noun Project: Protective Clothing by Yorlmar Campos, Boots by Fabio Meroni, Glove by Dolly Vu.

Preventing disease transmission when showing poultry

Exhibition birds are more frequently exposed to disease because they encounter other birds and people at shows. The following measures should be considered to keep you and your birds healthy before, during, and after the show.

Before the poultry show:

- Develop and implement applicable biosecurity and bird health practices at home.
- Clean and disinfect facilities, feeders, and chore boots.
- Limit bird's exposure to people.
- Control exposure to wildlife, wild birds, and other pests.
- Take only clean and disinfected equipment to the show.
- Don't show a bird or pen-mates for at least seven days after returning from an exhibition.
- Never bring an unhealthy animal to exhibition. Sick birds and sick people need to stay home so they do not risk spreading germs.
- Evaluate your bird's health daily. A healthy bird should exhibit these characteristics:
  - Erect stance with head and tail elevated
  - Bright red comb and wattles
  - Bright and alert eyes
  - Clean nostrils
  - Smooth, neat, clean feathers
  - Joints that are smooth and cool to the touch
  - Scales on the legs and feet that are clean and waxy in appearance
- Discuss the use of vaccines with a veterinarian and check the exhibition rules for any requirements. Poultry vaccinated for infectious diseases may be less likely to become ill, and if they become sick, they may be contagious for a shorter time.

During the poultry show:

- Continue to evaluate your bird's health daily. Does it have the following characteristics?
  - Erect stance with head and tail elevated
  - Bright red comb and wattles
  - Bright and alert eyes
  - Clean nostrils
  - Smooth, neat, clean feathers
  - Joints that are smooth and cool to the touch
  - Scales on the legs and feet that are clean and waxy in appearance
- Report any illness to the designated exhibition veterinarian or the appropriate exhibition staff so the bird can be evaluated.
- Use precautions when caring for sick birds to minimize the opportunity for disease transmission to other poultry or people.
- If you feel ill, see your doctor and tell them you have had poultry exposure. People with illness should stay away from birds until they are fever- free for at least 24 hours without the use of fever-reducing medication.
- Keep your cage and equipment clean.

National Pork Board

Wash boots in between visiting different premises.

- Wash your hands after contact with birds and equipment.
- No eating or drinking in the animal areas.
- Do not sleep in animal areas.

After the poultry show:

- Consult a health care provider and public health official as soon as possible if exhibitors or family members develop illness.
- Inform the health care provider of close contact with poultry and/or exhibition attendance.
- Ill people should avoid all contact with poultry until they are fever-free for at least 24 hours without the use of fever-reducing medications.
- Isolate and observe animals daily for illness after returning home and before allowing contact with other animals. The isolation/ observation period for clinical signs of disease should be no fewer than 7 days.
- Clean and disinfect equipment, clothing, shoes, and vehicles/trailers that were at the exhibition.
- Consult a veterinarian if birds become ill.

Zoonotic Diseases in Poultry

You can promote good poultry health and reduce the chance of human infection by understanding the signs of disease. Observe your birds daily for changes in behavior and appearance. If you see clinical signs like the ones below, follow these steps:

1. Talk to your veterinarian.
2. Practice good biosecurity to prevent disease transmission to other animals.
3. Use proper PPE to prevent transmission to humans.

CAMPYLOBACTERIOSIS

Cause of disease: *Campylobacter jejuni*

Clinical signs in poultry: No illness in birds

Clinical signs in humans: Mild to severe diarrhea, bloody diarrhea, stomach pain, cramps, nausea and/or vomiting, fever, headache, and muscle pain.

Routes of Transmission: Fecal-oral

Suggested PPE:

ERYSIPELAS

Cause of disease: Erysipelothrix rhusiopathiae

Clinical signs in poultry: General weakness, depression, diarrhea, and sudden death. Most sick birds die.

Clinical signs in humans: Erysipeloid—painful, red/ purple swelling on the hands. Lesions are usually confined to the hands and finger. Severe cases can progress to systemic infection with endocarditis.

Routes of Transmission: Direct contact (usually enters through cuts in the skin)

Suggested PPE:

INFLUENZA

Cause of disease: influenza A virus

Clinical signs in poultry: Lack of coordination, purple discoloration of the wattles, combs, and legs, soft-shelled or misshapen eggs, lack of energy and appetite, diarrhea, swelling of the head, eyelids, comb, wattles and hocks, nasal discharge, decreased egg production, coughing, sneezing, and sudden death without any signs

Photos: Wikipedia Commons

Clinical signs in humans: fever, lethargy, lack of appetite, coughing, nausea, vomiting, and diarrhea

Routes of Transmission: Direct, Aerosol, Fomites

Suggested PPE:

AVIAN TUBERCULOSIS

Cause of disease: *Mycobacterium avium* complex

Clinical signs in poultry: Decreased egg production, diminished weight gain, muscle loss, death.

Clinical signs in humans: High fever or chills, night sweats, belly pain, diarrhea, weight loss, fatigue, swollen glands, fewer red blood cells.

Routes of Transmission: Airborne

Suggested PPE:

ORNITHOSIS

Cause of disease: *Chlamydophila psittaci*
Clinical signs in poultry: Puffy and swollen eyes (conjunctivitis), lethargy, anorexia, weight loss, fluffed feathers, nasal discharge, and an enlarged liver.

Clinical signs in humans: Psittaccosis—fever, chills, headache, muscle aches, and dry cough

Routes of Transmission: Airborne
Suggested PPE:

SALMONELLOSIS

Cause of disease: *Salmonella*
Clinical signs in poultry: Diarrhea and discolored droppings

Photo: @goldenbergduw.com

Clinical signs in humans: Nausea, vomiting, abdominal cramps, diarrhea, fever, chills, headaches, and blood in the stool.

Routes of Transmission: Fecal-oral

Suggested PPE: