

# University of Michigan Environmental Health and Safety

## Zoonotic Risks by Species

### Birds

The following document describes common types of zoonotic illnesses encountered when working with the indicated species. This is not an exhaustive list and the possibility of zoonotic disease should be considered every time work is conducted with animals. Specific-pathogen-free status in laboratory animals tests only for the presence of particular pathogens and is NOT an assurance that the animal is pathogen-free or that it cannot transmit zoonotic diseases. PPE and experimental practices appropriate to the specific task should be followed when working with any animal species. EHS recommendations are made during review of your IACUC protocol –additional questions about the potential for zoonotic disease exposure should be directed to your EHS representative.

**If you have had an exposure and/or are showing symptoms of illness, and need medical attention refer to the information in the [University of Michigan's Bite Scratch Protocol](#)**

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#### Bacterial

<b>Disease:</b>	<b>CAMPYLOBACTERIOSIS</b>
<b>Description of Disease:</b>	<i>Campylobacter spp.</i> bacteria can be found in numerous species of animals including chickens, turkeys, and waterfowl where the bacteria colonize in the gastrointestinal tract.
<b>Symptoms in Animals:</b>	Infected birds generally do not show signs of illness but will typically continue to shed this bacteria and thus be a carrier of the disease.
<b>Transmission and Symptoms in Humans:</b>	In the laboratory environment, <i>Campylobacter spp</i> is transmitted to humans when a person ingests infected fecal material such as when a fecally contaminated glove or piece of equipment contacts a human's mucous membranes. Infected humans may either display no signs of illness or may develop abdominal pain, malaise, fever, nausea, vomiting, or diarrhea. Illness usually occurs within 2-5 days.

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<b>Prevention:</b>	<b>The practice of good personal hygiene, such as handwashing after handling animals or contaminated equipment or caging, use of personal protective equipment, and effective environmental sanitation are most important in preventing disease transmission to personnel.</b>
<b>Additional Information:</b>	<a href="https://www.cdc.gov/campylobacter/index.html">https://www.cdc.gov/campylobacter/index.html</a>

<b>Disease:</b>	<b>ERYSIPELAS</b>
<b>Description of Disease:</b>	Erysipelas is a disease caused by the bacteria <i>Erysipelothrix rhusiopathiae</i> , which can be harbored by domestic fowl and wild birds.
<b>Symptoms in Animals:</b>	Birds, as well as other animals, may be carriers and shed the organism without showing clinical signs of disease. If affected, birds may exhibit depression and sudden death or less commonly become chronically infected and have skin lesions and swollen hocks.
<b>Transmission and Symptoms in Humans:</b>	Erysipelas is transmitted to humans by direct contact, usually through cuts in the skin, with infected animals, tissues, or feces. Infected humans most frequently exhibit well-defined skin lesions such as redness or swelling within 1 week of exposure but may also exhibit fever, a generalized bacterial infection, endocarditis (inflammation of the inner lining of the heart), encephalitis (inflammation of the brain), and septic arthritis.
<b>Prevention:</b>	The practice of good personal hygiene, such as hand washing after contacting animals and their environment, the use of personal protective equipment, and effective environmental sanitation are most important in preventing disease transmission to personnel.
<b>Additional Information:</b>	<a href="https://www.merckmanuals.com/professional/infectious-diseases/gram-positive-bacilli/erysipeloithricosis">https://www.merckmanuals.com/professional/infectious-diseases/gram-positive-bacilli/erysipeloithricosis</a>

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<b>Disease:</b>	<b>PSITTACOSIS</b>
<b>Description of Disease:</b>	Psittacosis is a bacterial infections caused by <i>Chlamydia psittaci</i> .
<b>Symptoms in Animals:</b>	Infected birds are often asymptomatic, but can become clinically affected when stressed or when infected with a large dose of organism. Infected birds can have nasocular discharge, green to yellow-green droppings, fever, fluffed feathers, lethargy, inappetance, and weight loss.
<b>Transmission and Symptoms in Humans:</b>	Humans acquire the infection by direct contact or by inhaling the organism present in dried droppings and respiratory secretions from birds. Although all birds are susceptible, pet birds (parrots, parakeets, macaws, and cockatiels) and poultry (turkeys, chickens, and ducks) are most frequently involved in transmission to humans. The incubation period is 5 to 14 days. The most common symptoms in humans include fever, chills, fatigue, headache, muscle and joint aches, cough and shortness of breath. Infected individuals may develop pneumonia . Endocarditis, hepatitis, and neurologic complications may occasionally occur.
<b>Prevention:</b>	The practice of good personal hygiene, such as handwashing after handling animals and their environment, the use of personal protective equipment that protects against aerosolized droplets, and appropriate environmental sanitation are important in preventing disease transmission to personnel.
<b>Additional Information:</b>	<a href="https://www.cdc.gov/pneumonia/atypical/psittacosis/index.html">https://www.cdc.gov/pneumonia/atypical/psittacosis/index.html</a> <a href="http://www.nasphv.org/Documents/PsittacosisCompendium.pdf">http://www.nasphv.org/Documents/PsittacosisCompendium.pdf</a>

<b>Disease:</b>	<b>SALMONELLOSIS</b>
<b>Description of Disease:</b>	Many species are susceptible to infection by bacteria within the genus <i>Salmonella</i> including chickens
<b>Symptoms in Animals:</b>	Poultry infected with serovars of <i>Salmonella</i> of zoonotic risk may display no signs of infection, though younger animals can be severely affected with diarrhea, dehydration, depression, and

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	death. Wild birds may appear sick with fluffed feathers, labored breathing, lethargy, and diarrhea.
<b>Transmission and Symptoms in Humans:</b>	In the laboratory environment, <i>Salmonella spp</i> may be transmitted to humans when ingestion of infected fecal material such as contact of fecally contaminated gloves or piece of equipment with mucous membranes. Infected humans may have diarrhea (with or without blood), fever, and stomach cramps. More severe signs and symptoms may develop especially in individuals with compromised immune systems. Onset of signs will usually occur 6 hours to 6 days after infection and last for 4-7 days.
<b>Prevention:</b>	The practice of good personal hygiene, such as hand washing after handling animals and their environment, the use of personal protective equipment, and effective environmental sanitation are most important in preventing disease transmission to personnel.
<b>Additional Information:</b>	<a href="https://www.cdc.gov/salmonella/">https://www.cdc.gov/salmonella/</a>

### Viral

<b>Disease:</b>	<b>AVIAN INFLUENZA</b>
<b>Description of Disease:</b>	Bird flu is an infection caused by avian influenza viruses. Wild birds worldwide carry the viruses in the intestines and respiratory tract.
<b>Symptoms in Animals:</b>	Wild birds usually do not get sick. However, bird flu is very contagious among birds and depending on if the virus is of low or high pathogenicity (ability of causing disease), some domesticated birds, including chickens, ducks, and turkeys, can either have mild illness or become very sick and die. Infected birds shed flu virus in their saliva, nasal secretions, and feces infecting other birds that are in contact with contaminated excretions or surfaces that are contaminated with excretions.
<b>Transmission</b>	Bird flu viruses do not usually infect humans, but cases of

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<b>and Treatment in Humans:</b>	human infection with bird flu viruses have occurred. However, during an outbreak of bird flu among domesticated birds, there is a possible risk to people who have contact with infected birds or surfaces that have been contaminated with excretions from infected birds. Human infections with bird flu viruses can occur when enough virus gets into the eyes, nose or mouth, or is inhaled. Symptoms of bird flu in humans may depend on the type of virus causing the infection and can range from typical flu-like symptoms including fever, cough, sore throat and muscle aches to eye infections, severe respiratory illness, and other life-threatening complications.
<b>Prevention:</b>	The practice of good personal hygiene and use of personal protective equipment including respiratory protection are important in preventing disease transmission to personnel. Vaccination against seasonal flu may be indicated.
<b>Additional information:</b>	<a href="https://www.cdc.gov/flu/avianflu/">https://www.cdc.gov/flu/avianflu/</a>

**Fungal**

<b>Disease:</b>	<b>CRYPTOCOCCOSIS</b>
<b>Description of Disease:</b>	Cryptococcosis is caused by the fungus <i>Cryptococcus neoformans</i> and is associated with bird droppings.
<b>Symptoms in Animals:</b>	Birds generally carry the fungus rather than become infected. If birds become infected, they can exhibit weakness, lethargy, loss of appetite, diarrhea, and difficulty breathing. Involvement of the nervous system can lead to blindness and paralysis.

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<b>Transmission and Treatment in Humans:</b>	People become infected after inhaling microscopic fungal spores. Most people are asymptomatic but some, particularly those with poor immune systems, may develop pneumonia-like illness including shortness of breath, cough, and fever. The infection can spread from the lungs to other parts of the body including the central nervous system, resulting in fever, headache, and change in mental status. If left untreated, disseminated cryptococcosis can lead to permanent neurologic damage.
<b>Prevention:</b>	People with weakened immune systems should avoid areas with bird droppings, and should consult with a physician prior to working with birds. Personal protective equipment with respiratory protection and good hygiene practices can prevent infection.
<b>Additional information:</b>	<a href="https://www.cdc.gov/fungal/diseases/cryptococcosis-neoformans/index.html">https://www.cdc.gov/fungal/diseases/cryptococcosis-neoformans/index.html</a> <a href="http://www.cfsph.iastate.edu/FastFacts/pdfs/cryptococcosis_F.pdf">http://www.cfsph.iastate.edu/FastFacts/pdfs/cryptococcosis_F.pdf</a>

<b>Disease:</b>	<b>HISTOPLASMOSIS</b>
<b>Description of Disease:</b>	Histoplasmosis is caused by the fungus <i>Histoplasma capsulatum</i> . Birds carry the fungus on their feathers.
<b>Symptoms in Animals:</b>	Birds are generally not infected by this fungus because of their high body temperatures. Rather birds carry the fungus which uses bird droppings as a growth medium.
<b>Transmission and Treatment in Humans:</b>	Transmission occurs when the spores of the fungus, which accumulate in bird droppings, are inhaled. Many people who inhale the fungal spores do not get sick. If symptoms occur, they usually begin 3 to 17 days after exposure and most commonly include fever, chest pains, body aches, and a dry cough. In some individuals, like ones with weaker immune systems, infections can spread to other organs outside the lungs and involve the brain and spinal cord leading to symptoms such as confusion and seizures.

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<b>Prevention:</b>	People with weakened immune systems or history of lung disease are advised to avoid areas with bird droppings and direct contact with birds. Personal protective equipment with respiratory protection and good hygiene practices can prevent infection. Areas with large amounts of bird droppings should be handled and cleaned carefully per recommended guidelines.
<b>Additional information:</b>	<a href="http://www.cdc.gov/fungal/histoplasmosis/">http://www.cdc.gov/fungal/histoplasmosis/</a> <a href="https://www.ccohs.ca/oshanswers/diseases/histopla.html">https://www.ccohs.ca/oshanswers/diseases/histopla.html</a>

### References

Merck Veterinary Manual 2020 <a href="https://www.merckvetmanual.com/">https://www.merckvetmanual.com/</a>
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