



HISTOPLASMOSIS

Other names: Cave or Caver's disease, spelunker's lung, Ohio River Valley or Mississippi River Valley Fever, *Histoplasma capsulatum*

CAUSE

Histoplasmosis is a fungal infection that most often affects the lungs and is caused by breathing in microscopic spores of the fungus *Histoplasma capsulatum*. The fungus is present in many areas of the world, and in Canada, histoplasmosis is endemic in Quebec, Ontario, Alberta, and there has been at least one confirmed outbreak in Saskatchewan. A case of histoplasmosis was reported in a dog from New Brunswick, indicating the possibility of the fungus in soils of that province.

RISK TO HUMAN AND DOMESTIC ANIMAL HEALTH

The fungus *H. capsulatum* has been found in humans and many animal species. In some instances, humans and animals, primarily dogs and cats, but also a wide range of other animal species, can get the disease histoplasmosis. Histoplasmosis is not known to be transmitted directly from a sick animal to a human. Asymptomatic and acute cases of histoplasmosis in humans and animals usually resolve without treatment. Treatment is required in more severe acute cases of the disease and in all cases of chronic and disseminated disease. People with weakened or poorly developed immune systems are at the greatest risk for developing severe and disseminated histoplasmosis, including: infants; young children; aged persons (particularly those with chronic lung problems from other diseases); persons with acquired immunodeficiency syndrome (HIV/AIDS) or cancer; and persons receiving cancer chemotherapy, high dose steroid therapy, or other immunosuppressive drugs.

TRANSMISSION

Histoplasmosis is contracted by breathing in spores of the fungus that can be present in large accumulations of bat guano or bird droppings found at roosting sites of these animals or in soils that are enriched with nitrogen due to contamination with large amounts of their excreta. While the fungus thrives in moist environments, dry soil and dried out bird and bat excrement can contain fungal spores as well. This disease is not transmitted directly between animals or people, except in extremely rare cases between infected tissue organ donors and transplant recipients. Environmental transmission, thus, is the primary mode of transmission, and the majority of human histoplasmosis cases result from inhaling the spores of the fungus when large accumulations of bird or bat droppings are disturbed. High risk areas of exposure include caves, attics, and other enclosed spaces where large numbers of bats roost and birds (primarily chickens, pigeons, starlings, and blackbirds) congregate. However, while birds and bats can disseminate the fungus, the disease histoplasmosis is only rarely reported in free-ranging individuals of these species. Outbreaks of histoplasmosis are infrequent, but when they do occur, they most often involve cleaning up or disturbing bird droppings or bat guano during activities such as construction, demolition, renovation, sandblasting, cave exploration, and soil tilling.

CLINICAL SIGNS AND SYMPTOMS

Since inhalation of *H. capsulatum* spores is the main route of infection, histoplasmosis primarily affects the lungs. Histoplasmosis is similar in humans and animals, and there are 3 main manifestations of the disease: asymptomatic disease, respiratory disease (acute and chronic), and disseminated disease.

Asymptomatic disease is the most common manifestation in humans and 80% of the human population in endemic areas react positively to skin tests, indicating they have been exposed to the fungus even though they have never been diagnosed with histoplasmosis. The **respiratory disease** can be benign and self-resolve,



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or it can cause major lung disease, requiring treatment. In *acute* disease, respiratory signs and symptoms appear 3 – 17 days after exposure and consist of flu-like symptoms, including malaise, fever, chest pains, dry or non-productive cough, headache, loss of appetite, shortness of breath, joint and muscle pains, chills, and hoarseness. The *chronic* disease resembles tuberculosis and can worsen over months or years. Individuals that have had chronic histoplasmosis can get sick with the disease later in life if they become immunosuppressed. The most severe and exceptionally uncommon form of this disease is **disseminated histoplasmosis**, which involves the fungus spreading from the lungs to other body organs. Disseminated histoplasmosis is fatal if untreated and treatment is not always successful.

MANAGEMENT AND PREVENTION

Accumulations of bat guano or bird droppings should be considered a potential source of *H. capsulatum*, even in areas where the fungus is not reported. Care should be taken to not disturb such material, including soils contaminated with bird or bat droppings. Wearing a Canadian Centre for Occupational Health and Safety (CCOHS)-approved N95 respirator with a high efficiency particulate air (HEPA) filter capable of filtering particles less than two microns in size (TC 84A-XXXX N95) is strongly recommended if working in environments or participating in activities where exposure to spores of *H. capsulatum* is possible. Removal of large amounts of bird or bat droppings should be done by professionals only. Wearing the previously described respirator, minimize the formation of airborne dust containing fungal spores by gently spraying the material with a 10% bleach solution before collecting it in a sturdy and sealable container or bag and follow appropriate provincial or territorial regulations and guidelines for proper disposal. In cases of possible exposure to spores of *H. capsulatum* where individuals develop symptoms of histoplasmosis, they should seek prompt medical attention for accurate diagnosis of the disease and treatment with appropriate antifungal medications if warranted.

SUGGESTED READING

- [Centers for Disease Control and Prevention: Histoplasmosis](#)
- [Pathogen Safety Data Sheets: Infectious Substances – Histoplasma capsulatum](#)
- [Canadian Centre for Occupational Health and Safety – Histoplasmosis fact sheet](#)
- [CWHC How to manage bats in Buildings](#)

