Histoplasmosis

What is histoplasmosis and what causes it?

Histoplasmosis is an infectious disease caused by a fungus called Histoplasma capsulatum.

The infection usually affects the lungs and symptoms can vary greatly. It can sometimes affect other parts of the body, including the eyes, liver, central nervous system, skin, or adrenal glands. For example, “ocular histoplasmosis syndrome” (also known as “presumed ocular histoplasmosis”) is a condition that results in impaired vision (affects the eyes). Having a weakened immune system increases your risk for getting this disease (e.g., the very young, very old, or those with medical conditions that lower the body’s resistance to infections).

The Histoplasma organism thrives in moderate temperatures, rich soil, and moist environments. Droppings from chickens, pigeons, starlings, blackbirds, and bats support its growth. Birds are not infected with it because of their high body temperatures, but they do carry it on their feathers. Bats can be infected because they have a lower body temperature than birds and can excrete the organism in their droppings.

To multiply, Histoplasma capsulatum produces small spores called conidia. The conidia of Histoplasma capsulatum are only two millionths of a meter (microns, µm) in diameter. When these conidia are inhaled, they are small enough that they enter the lungs and start an infection. Many of these infections are easily overlooked because they either produce mild symptoms or none at all. However, histoplasmosis can be severe and produce an illness similar to tuberculosis.

How does the lung infection develop?

When a person breathes in the conidia (spores) of Histoplasma capsulatum, the lungs’ defense mechanisms attempt to neutralize them. Not all the conidia are neutralized. The ones that avoid the defense start an infection. The symptoms of the infection appear within 5 to 18 days after exposure, most commonly in 10 days.

There are different forms of lung infection, with at least five general forms noted as:

- **Asymptomatic** is recognized only by performing medical laboratory tests as the victim does not show any symptoms and is unaware of the infection.
- **Acute disseminated** does not last long (i.e., acute or short term) but it involves other organs outside the lungs (i.e., disseminated). Symptoms include fever, cough, exhaustion and enlargement of the liver and spleen.
- **Acute benign respiratory** is produced by a heavy exposure to conidia. It is

marked by weakness, fever, chest pains, and cough. The severity of the symptoms depends upon the magnitude of the exposure.
- **Chronic disseminated** is of long duration (chronic) and it involves other organs outside of the lungs. It occurs in people with a reduced capacity to fight disease. Symptoms include fever, anemia, hepatitis, pneumonia, inflammation of the lining of the heart cavity, meningitis, and ulcers of the mouth, tongue, nose and larynx.
- **Chronic pulmonary** occurs in persons with pre-existing lung diseases such as emphysema. It resembles tuberculosis.

How common is histoplasmosis in Canada?

Regulators reports that histoplasmosis is the most common infection caused by a fungi in North America, and that it is common in areas around the Mississippi and Ohio rivers.

Cases in Canada have been noted along the St. Lawrence River and in Alberta. However, under diagnosis in Canada may be a concern.

HOW IS HISTOPLASMOSIS RECOGNIZED?

If signs or symptoms do appear, they may include:

- fevers
- headaches
- muscle aches
- dry cough
- tightness in the chest or chest pain
- joint pain
- rashes

Confirmation of a histoplasmosis diagnosis often requires laboratory examinations which identify Histoplasma capsulatum in sputum or lung biopsy. Blood and skin tests, and x-rays may be performed but they are only of secondary value in diagnosis.

HOW IS HISTOPLASMOSIS TREATED?

Most patients who develop histoplasmosis do not require treatment. Some may only require supportive treatment that relieves the symptoms of the disease. Severe symptoms with a large involvement of the lungs require treatment with specific antifungal drugs.

WHAT OCCUPATIONS ARE AT RISK?

Persons whose occupations involve contact with the soil, in particular soil enriched with bird and bat droppings, are at high risk of acquiring infection. They include:

- Farmers and poultry keepers, especially when cleaning silos, chicken coops, pigeon roosts and bat-infested lofts.
- Gardeners, landscapers and horticulturists (especially if using poultry manure as fertilizer, or where contact with droppings may occur).
- Construction, roofers, and other workers in similar occupations where there may be contact with droppings or contaminated soil.
- Workers in road construction, tree-clearing, or similar situations.
- Workers restoring, clearing or dismantling contaminated buildings or other structures where birds nest.
- Workers who service or repair heating and air-conditioning systems.
- Workers who monitor bird populations.
- Workers who have contact with bats or bat caves.

Others who may be at risk include archaeologists, geologists and medical laboratory

technicians who handle cultures of the organism. People who explore caves either through work or as a hobby may also be at risk.

HOW CAN WE PREVENT HISTOPLASMOSIS?

Prevention of histoplasmosis relies on avoiding exposure to dust in a contaminated environment. Before anyone cleans chicken coops or other contaminated soil, spraying with water is advisable to reduce dust.

Persons working in contaminated areas should use protective clothing such as gloves and coveralls. They should also use a respirator equipped with a high efficiency particulate air (HEPA) filter that is capable of filtering particles down to two microns in size. For major clean up operations of prolonged exposure, a powered air purifying or supplied air respirator may be necessary.