

# FACT SHEET

# HISTOPLASMOSIS

The following information will help you to become familiar with the epidemiology, symptomatology, ecology and control of Histoplasmosis.

## **WHAT IS HISTOPLASMOSIS?**

Histoplasmosis is a systemic mycosis of varying severity. The disease is known to occur in specific geographic foci over wide areas of North and South America, Africa, Asia and Australia. It is also found in Europe, but cases are rare.

## **HOW IS HISTOPLASMOSIS TRANSMITTED?**

Histoplasmosis is transmitted through inhalation of airborne fungal spores of *Histoplasma capsulatum*. The fungus grows naturally in soil and is often picked up by birds and bats and passed on in their feces (guano). The primary means of exposure is contact with large amounts of guano, although naturally occurring infections from inhalation of dust are possible.

Histoplasmosis transmission from person to person is possible only if an individual is inoculated with tissue from an infected patient. Because of this, the risk of person to person transmission is considered negligible.

## **WHAT ARE THE SYMPTOMS?**

Five clinical forms of Histoplasmosis are recognized. 1) The infection may be asymptomatic with only hypersensitivity to histoplasmin. 2) The acute benign respiratory type varies from a mild respiratory illness to a temporary incapacity with general malaise, fever, chills, headache, myalgia, chest pain and a nonproductive cough. Occasionally erythema multiforme and erythema nodosum may be observed. Multiple, small scattered calcifications in the lungs, hilar lymph nodes and spleen may be seen late in the course of the disease. 3) The acute disseminated Histoplasmosis type occurs with debilitating fever, GI symptoms, evidence of bone marrow suppression, hepatosplenomegaly, lymphadenopathy and follows a rapid course. This is most often seen in infants, young children and the immunocompromised. Without treatment it is usually fatal. 4) The chronic disseminated disease type is characterized by a low-grade intermittent fever, weight loss, weakness,

hepatosplenomegaly, mild hematological abnormalities, and focal disease. It normally follows a subacute course with progression over 10-12 months. Without treatment it is usually fatal. 5) The chronic pulmonary type clinically and radiologically resembles chronic pulmonary tuberculosis with cavitation. It occurs most often in middle-aged and elderly men with underlying emphysema and progresses over months or years, with periods of quiescence and occasionally spontaneous cure.

## **HOW IS HISTOPLASMOSIS DIAGNOSED?**

The diagnosis is confirmed by culture or by visualizing the fungus in Giemsa or Wright stained smears of ulcer exudates, bone marrow, sputum or blood. Special stains are required to demonstrate the fungus biopsies of ulcers, lungs, liver, or lymph nodes. The immunodiffusion test is the most specific and reliable serologic test available. Rising CF titers in paired sera may be encountered early in acute infections and is suggestive evidence of active disease. Recent positive skin tests with histoplasmin however, can raise the titer against the mycelial form of the fungus and the serological tests can cross-react with other mycoses. False negative test results are common enough that negative serological tests do not exclude the diagnosis. The histoplasmin skin test used in epidemiological studies is not useful for diagnosis.

## **WHAT IS THE TREATMENT FOR HISTOPLASMOSIS?**

Oral itraconazole is approved for treatment of pulmonary and disseminated Histoplasmosis in non-HIV positive individuals. Oral ketoconazole may be used in immunocompromised patients. Neither drug should be used in patients with CNS involvement. For other patients with disseminated Histoplasmosis, amphotericin (Fungizone®) IV is the drug of choice.

### ***HOW IS HISTOPLASMOSIS PREVENTED?***

Minimize exposure to dust in contaminated environments, such as bird or bat infested attics and caves and the surrounding soil. Use respirators or protective masks if required to enter contaminated areas. Wet down areas with water to eliminate dust. If cleanup of large amounts of guano is required, decontaminate the guano with a 3% formalin solution. Prior to decontamination, authorization for the use of formalin must be obtained from the appropriate health and environmental protection agencies. Formalin is a potential carcinogen so all treated guano must be disposed of as a hazardous waste. Most military installations will contract for the cleanup.

The best protection against Histoplasmosis is exclusion of birds and bats from buildings. Ensure that all windows are screened and that all screens are in good repair. If windows are unscreened, keep windows in attics, basements and unoccupied rooms closed to eliminate entryways for birds and bats. Repair any cracks and crevices in the exterior of the structure. Cracks as small as the size of a dime can allow bats access to the interior of the building. If cracks are present in the exterior of the building, windows are broken or screens are in disrepair, contact DEH or the appropriate maintenance authority. Work orders should be submitted immediately upon recognition of a structural problem.

Prior to removing any birds or bats from within buildings, the proper environmental protection authorities should be contacted. All species of bats and many birds in Germany are protected, and repairs may not be authorized until the animals migrate. Destruction of roosting sites or killing protected species violates host nation law, and depending upon the species involved, results in fines of 50,000 DM or more.

Prior to beginning any removal operation, determine if an ectoparasite problem exists. Removal of the birds or bats can cause their lice or ticks to move on to human hosts creating an even bigger problem. While bird and bat lice will not establish themselves on human host, they can cause irritating dermatitis. The ticks however are capable of transmitting numerous diseases to man.

During contingency operations, avoid using bird or bat infested structures when ever possible. If the building must be used, wet down the guano with Liquid bleach (3 tablespoons per gallon of water), or a 0.5% calcium hypochlorite solution to eliminate dust. Do not dry sweep. Mop up the areas and dispose of the guano by burying or incineration. Personnel involved in the cleanup should wear respirators, rubber gloves and disposable coveralls. If coveralls are not available, uniforms should be disinfected with bleach and thoroughly laundered.

If birds or bats have already accessed a building, contact Preventive Medicine for further information and assistance.