



## **Histoplasmosis fact sheet for laboratory workers**

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### **What is histoplasmosis?**

Histoplasmosis, also known as “cave disease” or “Darling’s disease”, is a disease caused by thermally-dimorphic fungi within the genus, *Histoplasma*, which are found in soil. Depending on a person’s immune status and the inoculum (amount of fungus which that person inhales), a person can remain asymptomatic or in a small proportion of cases, develop symptomatic disease. Disease can be localised to the lung or more rarely, disseminate to other parts of the body, e.g. liver, spleen, brain, joints, bone marrow, eyes. Disseminated histoplasmosis occurs among patients with weak immune systems, e.g. HIV/AIDS, cancer and those receiving immune-suppressive medication.

### **Epidemiology of histoplasmosis in South Africa**

The true burden of histoplasmosis in Africa is unknown, largely because this diagnosis is rarely considered or confirmed. Histoplasmosis can sometimes be misdiagnosed as tuberculosis (TB). The fungus, *Histoplasma* lives in the environment, usually in soil that contains a large amount of bird or bat droppings. Cases of acute pulmonary histoplasmosis have been diagnosed among persons exploring caves across South Africa. Cases of disseminated histoplasmosis are occasionally diagnosed among persons living with advanced HIV. Histoplasmosis can be occupationally acquired in a laboratory (usually the acute pulmonary form following inhalation of fungal “spores”) but no such cases have been confirmed in South Africa.

### **What are the symptoms of histoplasmosis?**

The mildest form (acute pulmonary histoplasmosis) may produce no signs or symptoms but severe infections (disseminated histoplasmosis) can be life-threatening. If symptoms of acute pulmonary histoplasmosis do occur, they appear within 1 to 3 weeks after exposure and patients complain of influenza-like symptoms e.g. dry cough, fever, and fatigue.

### **How is histoplasmosis acquired in the laboratory?**

The infectious conidial form of *Histoplasma* from (mould-phase) cultures can result in pulmonary infections. The disease may be acquired when cultures are handled outside a biosafety cabinet, conidia become airborne and are inhaled



by a susceptible person who is not wearing appropriate personal protective equipment. Local infection may be caused by accidental needle inoculation when handling viable cultures. Histoplasmosis cannot be transmitted from one person to another.

### **Sources/ specimens**

Potential sources of *H. capsulatum* in the laboratory include soil which has been collected for *Histoplasma* isolation and clinical specimens (such as urine, blood, lymph node tissue, bone marrow aspirates, sputum and bronchoalveolar lavage fluid) which have been collected from persons with suspected histoplasmosis.

### **How to handle fungal cultures in the laboratory**

In a diagnostic laboratory, all fungal cultures (moulds and dimorphic fungi in the mould phase) should be handled in a Class II biohazard safety cabinet, and not on the open bench.

If a clinician suspects histoplasmosis, this should be clearly marked on the specimen request form and the laboratory should inoculate the specimen onto agar slopes in screw-top bottles, rather than onto culture plates. If a fungus is cultured and *Histoplasma* is suspected, cultures should then be referred to the NICD's mycology reference laboratory for identification.

If it is necessary to manipulate *Histoplasma* cultures at the diagnostic laboratory, appropriate personal protective equipment should be worn (e.g. properly-fitted N95 mask, gloves, laboratory coat). Eye protection must be worn where there is potential risk of exposure to splashes such as when samples are in a liquid medium. Cultures should always be handled in a Class II biohazard safety cabinet. Cultures should always be properly sealed and labelled "biohazardous" to avoid the containers being accidentally opened.

### **What to do if there is an exposure to *Histoplasma* in the laboratory**

Laboratory personnel must ensure that the case of exposure is reported immediately to their on-site safety representative. It is also imperative to know the immune status of the host. Among immunocompetent individuals, the disease is often self-limited and may resolve without treatment. Immunocompromised individuals should be referred to an infectious diseases physician for assessment; antifungal prophylaxis is not routinely prescribed. Exposed individuals must be monitored for signs or symptoms of disease. Amphotericin B and itraconazole are used for the treatment of



severe or extensive disease caused by *H. capsulatum* and itraconazole to treat milder forms. Corrective action to prevent future exposures to the fungus must be taken. Following any spills in the laboratory, personnel should immediately leave the laboratory to let the aerosols settle. Then while wearing appropriate personal protective equipment, cover the spill with a paper towel and apply a suitable disinfectant. Start wiping from the perimeter and work towards the centre. One per cent solutions of sodium hypochlorite, 2% phenol, 2% gluteraldehyde, isopropyl alcohol, and formaldehyde are some of the disinfectants that may be used. Allow sufficient contact time before clean up (approximately 30 min). Decontaminate before disposal. *H. capsulatum* spores and yeast cells are inactivated when held at temperatures above 40 °C for longer periods of time. Spores are inactivated in dry conditions.

***This is a fact sheet and is for informational purposes only. This should not be used as a standard operating procedure.***



## References

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