

Aspergillus Fact Sheet

Aspergillus is a group of moulds, which is found everywhere world-wide, especially in the autumn and winter in the Northern hemisphere. Moulds are also called filamentous fungi. Only a few of these moulds can cause illness in humans and animals. Most people are naturally immune and do not develop disease caused by *Aspergillus*. However, when disease does occur, it takes several forms.

General Information

Mycology

Aspergillus is a genus consisting of several hundred mould species found in various climates worldwide. *Aspergillus niger* is ubiquitous in the environment and can commonly be found on dead leaves, stored grain, compost, and decaying vegetation in many different geographical locations. It has also been isolated from sun-dried fruits. It is highly aerobic and is found in almost all oxygen-rich environments. Fungi commonly grow on carbon-rich substrates such as monosaccharides (eg. glucose) and polysaccharides (eg. amylose).

In addition to growth on carbon sources, many species of *Aspergillus* demonstrate oligotrophy where they are capable of growing in nutrient-depleted environments, or environments in which there is a complete lack of key nutrients. *Aspergillus* is a very adaptable fungus that tolerates almost any temperature and needs only 2- 3 days to grow in a water source.

Epidemiology of transmission

The main route of acquiring *Aspergillus* infection is by inhalation of the fungal spores. The fungus may then travel via the bloodstream to involve multiple other deep organs. There is no person-to-person transmission of *Aspergillus*.

It is uncommon for environmental mould to cause an infection in healthy individuals. *Aspergillus* species have emerged as an important cause of life-threatening infections in immunocompromised patients such as in individuals who have a severe reduction in immune function (eg. after bone marrow transplant, cancer treatment, AIDS or major burns). Infections by some species such as *Aspergillus* species (aspergillosis) may be life threatening.

Clinical manifestations

Clinical manifestations are variable, ranging from allergic to invasive disease, largely depending on the status of the host's immune system. There are many different kinds of aspergillosis, causing different symptoms ranging from respiratory symptoms like wheezing, coughing and even fever in people with asthma or cystic fibrosis, to allergic sinusitis or a "fungus ball" in the lung or other organs. Lung aspergillomas usually occur in people with other forms of lung disease, like emphysema or a history of tuberculosis. People with an aspergilloma in the lung may have no symptoms at all. Sometimes they may cough up bloody mucus. People who have invasive aspergillosis in the lung may have symptoms such as fever, chest pain, cough, and shortness of breath. Other symptoms may develop if the infection spreads beyond the lungs. When invasive aspergillosis spreads outside of the lungs, it can affect almost any organ in the body, including the brain.

Basic Prevention

Various measures can be followed to minimize or eliminate fungal growth indoors. Once a microbial problem has been identified it should be remedied as soon as possible.

- Reduce the moisture level availability.
- Improve ventilation.
- Vapour barriers and good insulation of surface building can minimize fungi growth.
- Clean up water spills promptly.
- Porous materials (eg. paper, cardboard, gyprock) that are water damaged or contaminated with fungi should be disposed of where possible.



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Infection Prevention and Control Measures

Healthcare Prevention Measures

Routine / Standard Precautions is sufficient for patients who are suspected or confirmed to have aspergillosis. The key prevention strategies are focused on environmental measures during construction such as:

- Moving patients deemed at high risk of aspergillosis to an alternative area
- Postponement of immunosuppressive treatment and commencement of an antifungal prophylaxis if transfer is not possible
- Installation of robust, dust-proof barriers between patient and construction areas
- Seal ventilation ducts within the construction zone and vent air from the construction zone to outside of the building
- Designate an entrance for building site workers to access the work area that is as far as possible from patient care areas.
- Use of HEPA filtration systems and ensuring the filters are changed regularly

Environmental control measures

Spores are very resistant and can survive in soil and decaying matter for a long time.

Hospital-grade cleaning and disinfecting agents with fungicidal claims are sufficient for environmental cleaning in the context of *Aspergillus*. All horizontal and frequently touched surfaces should be cleaned daily and when soiled by wiping with a damp cloth to avoid dispersal of dust. The healthcare organization's terminal cleaning protocol for cleaning of the patient's room following discharge, or transfer should be followed. Patient care areas closest to the construction zone may need to increase the frequency of cleaning to prevent dust accumulation.

All patient care equipment should be cleaned and disinfected as per Routine / Standard Practices before reuse with another patient or a single use device should be used and discarded in a waste receptacle after use.

References:

1. Public Health Agency of Canada (PHAC), Material Safety Data Sheet – Infectious Substances: *Aspergillus spp.* <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds11e-eng.php>
2. Guidelines for Environmental Infection Control in Healthcare Facilities, CDC. MMWR June 2003, Vol 52, No RR-10
3. Walsh, TJ et al. Treatment of Aspergillosis: Clinical Practice Guidelines of the Infection Diseases Society of America. CID 2008;46;327-360
4. Bartley, JM. APIC State-of-the-Art Report: The role of infection control during construction in healthcare facilities. AJIC 2000;28;156-169.
5. Aspergillosis (*Aspergillus*), CDC http://www.cdc.gov/nczved/divisions/dfbmd/diseases/aspergillosis/#what_aspergillus

