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HSS(MD)10/2000

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12 May 2000

Dear Colleague

ASPERGILLUS

This letter is to inform you of the potential dangers from the release of aspergillus fungi spores into the environment near vulnerable patients. Aspergillosis is a serious and often fatal disease.

A recent investigation into a number of diagnosed and suspected cases of invasive aspergillosis in an NHS Trust across the water indicated that the most likely source of the aspergillus was from major demolition work on the hospital site.

What is Aspergillosis?

Aspergillosis is a disease caused by invasion of the lung by the fungus *Aspergillus fumigatus*. The infection is acquired by inhalation of airborne spores of the fungus which settle and grow in damaged parts of the lung.

Aspergillus is the name applied to a group of mould fungi which are commonly identified in environmental sources including dust, organic debris, the internal surfaces of buildings and plaster and brickwork. They are natural inhabitants of soil, water and organic debris. The organisms sporulate freely, releasing large numbers of airborne spores (3-6 µm in diameter) which are disseminated by air currents. Demolition or alterations to the building fabric/ventilation system can release spores into the atmosphere.

Which patients are at risk?

Patients at risk from invasive aspergillosis include those with reduced immunity due to:

- severe neutropenia (bone marrow transplantation, leukaemia);
- congenital immunodeficiency such as severe combined immunodeficiency or chronic granulomatous disease;

- organ transplant recipients;
- diseases such as AIDS;
- high-dose corticosteroid therapy;
- people with already damaged lungs due to previous disease;
- those having undergone major surgery.

Increased understanding of the disease has led to the development of a variety of environmental and general strategies for the prevention of aspergillosis. It is anticipated that these, coupled with antifungal agents active against *Aspergillus* spp, will have a significant impact upon the morbidity and mortality associated with this infection. However, despite the development of new approaches to therapy, aspergillus infection still carries a high mortality. Preventing avoidable exposure is thus important.

What can Health and Social Care professionals do?

In order to achieve a safe environment for high-risk patients it is essential that before work starts on new build or refurbishment all parties, ie clinicians, infection control team and estates and facilities professionals, have established a co-ordinated strategy for dealing with aspergillus and facilities. The strategy should prevent patients at risk of aspergillosis from exposure to high levels of airborne aspergillus spores, and should cover the following.

Maintenance

Engineering and maintenance operations should be reviewed and co-ordinated with infection control policies in conjunction with infection control teams. Dust accumulation should be prevented, and regular cleaning of ceiling and air-duct grilles undertaken when rooms are not occupied by patients.

Building and refurbishment work

During construction and refurbishment work, appropriate measures to prevent dust from entering patient-care areas where patients are at risk of aspergillus should be taken in association with estates professionals.

Where construction or refurbishment works are carried out, suitable precautions need to be taken both within the building and in adjacent buildings to minimise the exposure of patients to aspergillus, particularly those within the “at risk” categories.

To reduce the risk of aspergillus infection arising from the built environment, a range of strategies is available including filtration of air, differential air pressure regimes, and increasing the impermeability of buildings to the fungus spores.

For example, as far as reasonably practical in buildings where works which may release aspergillus spores are being carried out, positive air pressures should be maintained in the adjacent patient care areas relative to the work area, unless there are contra-indications to such pressure differentials due to clinical care or infection control requirements.

Pedestrian traffic flow should be directed away from construction areas to prevent dust dispersion, entry of contaminated air, or tracking of dust into patient areas.

During the works, air and environmental monitoring for fungal spores may be appropriate when building work is taking place adjacent to an area where patients are at risk of aspergillus.

Planning new build/refurbishment

The planning of specialised care units for high-risk patients should involve clinicians, the infection control team, and estates and facilities professionals. The following environmental strategies may be necessary to minimise fungal spore counts:

- air filtration: HEPA filters are 99.97% efficient in filtering 0.3 mm-sized particles and should be placed in the unit air supply;
- air intakes and exhaust ports should be placed such that air comes in from one side of the room, flows across a patient's bed and exits on the opposite side of the room;
- room air pressure should be maintained continuously above that of the corridor unless there are clinical care or infection control requirements for not doing so;
- windows, doors and intake and exhaust ports should be constructed to achieve complete sealing of the room against any leaks. In addition, facilities should be designed without false ceilings.

Management procedures

A formal risk assessment should be carried out at an early stage to achieve a safe environment for at-risk patients. This process, led by management, should involve the infection control team, estates and facilities professionals, risk manager and all potentially affected departments.

The outcome of the risk assessment should be used to inform the procurement process, including:

- design of the installation and the construction/refurbishment process;
- design documentation;
- health and safety plan;
- principal contractor safety plan;
- operating and maintenance instructions/record information

A formal review process should be in place to regularly monitor the key environmental factors identified by the infection control team and advise the Trust accordingly.

This process should be documented and involve a number of key representatives, including:

- the infection control team;
- the clinical, nursing staff and general managers responsible for the departments treating “at-risk” client groups;
- estates and facilities;
- the contract planning supervisor.

Contingency plans should be agreed and in place to respond to monitoring information, which may indicate that additional action is required. These plans should address both built environment and patient care actions necessary to protect patients.

Bibliography

The Management and Control of Hospital Infection (HSS(MD)9/2000) April 2000: Action by the HPSS for the Management and Control of Infection in Hospitals in Northern Ireland.

Yours sincerely

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COPIED TO:

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