Healthcare Happenings: IPC Highlight

Azole-resistant *Aspergillus*

WHAT IS IT?

Aspergillus is a common fungus or mold found in indoor and outdoor environments. It can cause life-threatening infections in those with weakened immune systems or pulmonary problems. *Aspergillus fumigatus* (*A. fumigatus*) is the leading cause of invasive mold infections in humans and is becoming more resistant to antifungal medications.

Azole- resistant *A. fumigatus* can cause an invasive life-threatening infection, called aspergillosis. Patients with severe cases of respiratory infections (like influenza or COVID-19) have also developed aspergillosis. Triazole antifungal drugs, commonly called azoles, are the primary treatment for aspergillosis. Azole-resistant *A. fumigatus* infections are more difficult to treat, and these **patients are up to 33% more likely to die** than patients with susceptible infections. In patients with high-risk conditions such as stem cell or organ transplants, **mortality from azole-resistant invasive aspergillosis is higher than 50%.**

Emergence of azole-resistance in *A. fumigatus* is thought to be due to the widespread use of azole fungicides in agriculture. Some *A. fumigatus* strains carry resistance markers that have been associated with environmental fungicide use rather than a patient's previous exposure to antifungals. *A. fumigatus* that is resistant to all azole antifungal medications is emerging in the U.S.

Azole-resistant *A. fumigatus* cases have also been reported in the Philadelphia area.

What you need to know

- *A. fumigatus* can cause an invasive life-threatening infection, called aspergillosis.
- Patients with azole-resistant *A. fumigatus* infections are up to 33% more likely to die than patients with susceptible infections.
- Emergence of azole-resistance in *A. fumigatus* is thought to be due to the widespread use of azole fungicides in agriculture.

TRANSMISSION

Aspergillosis is not transmitted between people or between people and animals.

Transmission occurs through inhalation of airborne spores called conidia. Hospital-acquired infections may be sporadic and associated with contaminated dust exposure during building renovation or construction. Occasional outbreaks of cutaneous infection have been traced to contaminated biomedical devices. The incubation period for aspergillosis is unclear and likely varies depending on the initial infectious dose of *Aspergillus* and the host immune response.

DIAGNOSIS AND TREATMENT

A definitive diagnosis of aspergillosis typically requires a positive culture and histopathological evidence of infection. Other diagnostic tools include radiology, galactomannan antigen detection, Beta-D-glucan detection, and polymerase chain reaction (PCR).

Healthcare professionals should be aware that resistant infections are possible even in patients not previously treated with antifungal medications. Most U.S. laboratories do not have the capability to test for antifungal-resistance in *A. fumigatus*. If resistant aspergillosis is suspected in a hospital that lacks immediate access to testing, isolates should be sent to commercial laboratories that are able to perform antifungal susceptibility testing.

Select antifungal treatment based on susceptibility testing. Select an agent that can reach infected area of the body.

REPORTING

Aspergillosis is not a reportable infection in any U.S. state and is not nationally notifiable. If a specimen is determined azole-resistant via susceptibility testing, we encourage voluntary reporting of cases to PDPH. Please complete a pan-drug-resistant organism case report form. Completed forms can be faxed to (215) 238-6947.

IPC RECOMMENDATIONS

The primary infection control measures for prevention of *A. fumigatus* transmission in healthcare settings are:

- Cleaning and disinfecting medical equipment with recommended products
- Take IPC precautions during construction or renovation such as placing dust barriers, increasing ventilation, and limiting travel from the construction zone directly into patient care areas
- Frequently clean or remove plants (real or artificial) from patient care areas, as dust and spores can accumulate
- Inter-facility communication about patient's azole resistant *A. fumigatus* status when patient is transferred to another healthcare facility

References:

Antifungal-Resistant Aspergillus. Centers for Disease Control and Prevention. https://www.cdc.gov/fungal/diseases/aspergillosis/antifungal-resistant.html#:~:text=Azole-Resistant%20Aspergillosis%20A.%20fumigatus%20can%20cause%20an%20invasive,%28like%20influenza%20or%20COVID-19%29%20have%20also%20developed%20aspergillosis.

Patterson TF, Thompson GR, et al.Practice Guidelines for the Diagnosis and Management of Aspergillosis: 2016 Update by the Infectious Diseases Society of America, Clinical Infectious Diseases, Volume 63, Issue 4, 15 August 2016, Pages e1–e60, https://doi.org/10.1093/cid/ciw326