

**Marathon County Health Department  
Centers for Disease Control Blastomycosis Investigation**

**Executive Summary  
October 13, 2011**

**Key Summary Points**

- In the summer of 2010, Centers for Disease Control assisted the State of Wisconsin Division of Public Health and the Marathon County Health Department to investigate Blastomycosis in our area.
- The investigation informed us that exposure to Blastomyces is widespread, but not everyone develops symptoms of infection.
- Based upon this investigation, persons of Hmong ethnicity may be at increased risk for Blastomycosis, but the reasons for this are not clear. In addition, engagement in outdoor activities may not appear to be a risk factor for illness among cases included in this outbreak investigation.
- Currently, there are no effective prevention measures for Blastomycosis, therefore it is important that people are aware of the signs and symptoms and seek medical care.

**Investigation Background**

During February 2010, county and state health scientists first noticed an increase in the reported number of Blastomycosis cases in Marathon County, Wisconsin. The Marathon County Health Department and the Wisconsin Division of Public Health found that cases were grouped in certain neighborhoods, and that an unexpectedly high number of cases occurred in people of Hmong ethnicity. During June 2010, scientists from the Centers for Disease Control and Prevention (CDC) began assisting state and local partners with the investigation to look at factors associated with being ill with Blastomycosis.

**Blastomycosis**

Blastomycosis is an infection caused by the fungus *Blastomyces dermatitidis*. It can affect humans, dogs, and other animals. The fungus lives in the soil and in association with decomposing organic matter such as wood and leaves. Lung infection can occur after a person inhales airborne, microscopic fungal spores from the environment. However, approximately 50% of people who inhale the spores do not get sick. The symptoms of Blastomycosis are similar to flu symptoms, such as cough, chest pain, fever, night sweats, and fatigue. The infection can sometimes become serious if it is not treated, especially if the fungus spreads from the lungs to other parts of the body. Blastomycosis cannot be spread from person to person.

Blastomycosis is endemic (native and common) in the United States, with most cases occurring in the Ohio and Mississippi River Valleys, the southeastern states, and around the Great Lakes. Scientists do not know a lot about the conditions that the fungus needs to grow, and they have only been able to isolate it from the environment a few times. In the past, researchers have found that Blastomycosis is sometimes more common among people who participate in outdoor activities such as hiking, hunting, fishing, and yard work.

## **Results**

There were a total of 55 Blastomycosis cases in Marathon County between September 2009 and June 2010. Most of the cases occurred in males, and many of the patients were Hmong. The majority of these people had to stay in the hospital at some point during the course of their illness, and two of them died from Blastomycosis.

To investigate the factors associated with being ill from Blastomycosis, the scientists conducted a study in which they interviewed patients who were diagnosed with Blastomycosis, and compared them to people who live in the same area as the case patients but did not get sick (controls). For every case-patient the scientists interviewed, they also interviewed three controls. Case patients were more likely to be Hmong and more likely to have an underlying medical condition than controls. However, there were no major differences in travel, work, or recreational activities between the case patients and controls, and the scientists did not identify a particular exposure that could account for the large increase in reported cases.

Mapping the case patients' addresses showed that many of the cases occurred in distinct neighborhood clusters. Even though many of the patients from different households knew each other and had been to each other's homes, there was no single common place that all of the patients had visited.

To determine if any of the controls were also exposed to the Blastomyces fungus, but did not develop symptoms of the infection, scientists performed blood testing. Seven case patients and 27 controls volunteered to have their blood tested. The results of the blood tests showed that all seven case patients and almost half of the controls had been exposed to Blastomyces at some point in their lives; however, the test cannot tell scientists exactly when the exposure occurred.

## **Conclusions**

An unexpectedly high number of Blastomycosis cases occurred in Marathon County, Wisconsin during September 2009 through June 2010. County, state, and federal health agencies worked together to better understand the reasons for this increase in the number of cases. There was no single common place that all of the cases had visited, and it is not entirely clear why so many Hmong got the infection. One possibility is that the high incidence of Blastomycosis in the Hmong is related to genetic susceptibility. People with underlying chronic medical conditions may be more likely than healthy people to develop Blastomycosis. For cases included in this study, outdoor activities did not appear to increase their risk of getting Blastomycosis.

Cases were grouped within neighborhoods, which may be due to specific features of the environment that helped the fungus grow, such as soil type, weather patterns, and construction activities. Finally, evidence that some of the controls had previously been exposed to Blastomyces confirms that the fungus does not always cause symptoms of infection.

Since there are no clear strategies to prevent Blastomycosis, it is important to promote awareness of the symptoms of infection so that healthcare providers can promptly diagnose and treat Blastomycosis.