

Enhanced Surveillance for Coccidioidomycosis

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Sarah Gregory] I'm Sarah Gregory and today I'm talking to Kaitlin Benedict, a CDC epidemiologist, about fungal infection found in the Southwestern United States. Welcome, Kaitlin.

[Kaitlin Benedict] Thank you for having me.

[Sarah Gregory] So, tell us, what is coccidioidomycosis? How does it affect people?

[Kaitlin Benedict] Coccidioidomycosis is an infection that's caused by a fungus called coccidioides. About 40 percent of people who are infected with it develop symptoms. Most commonly they're flu-like symptoms, like fever, cough, body aches, and fatigue. Some people can feel sick for weeks to months. And a smaller proportion of people can get very serious disease or even die, if the fungus spreads from their lungs to other parts of the body, especially the lining of the brain, causing meningitis. Some of these people can be affected for years, even for life.

[Sarah Gregory] I believe it's also referred to as Valley fever. Why is that?

[Kaitlin Benedict] Yes, it's also called Valley fever because many of the first cases discovered in the U.S. were in people who lived in California's San Joaquin Valley, which is still one of the main areas that's affected by this disease. It's important to note that people get Valley fever in many other places besides the San Joaquin Valley, especially Southern Arizona cities like Phoenix and Tucson.

[Sarah Gregory] Okay, so where is it usually found and how do people become infected?

[Kaitlin Benedict] The fungus coccidioides lives in the environment, in soil and dust in certain places. In the United States, we know that these areas include Arizona, California, Nevada, New Mexico, Utah, Texas, and Southcentral Washington state, but the fungus probably lives in other areas, too. People become infected by breathing coccidioides spores in the air. Symptoms from the infection usually begin one to three weeks later and about 95 percent of people who get Valley fever live in Arizona or California.

[Sarah Gregory] If less than five percent of Valley fever cases are found outside of Arizona or California, why is it important to improve surveillance for it in other states?

[Kaitlin Benedict] There are at least a few hundred people each year, that we know of, that get Valley fever and live in places other than Arizona and California. And we've seen this number increase over the past decade or so, similar to the trend in cases nationwide. There are probably a lot more Valley fever illnesses that aren't reported to health departments, because the illnesses never get diagnosed. We know a lot about Valley fever in Arizona and California, but not as much about how it affects people in other Southwestern states. We also don't know a lot about how it impacts people who travel to the Southwest and then get sick after they return home. And there are a lot of people who travel from colder regions of the United States to the Southwest each year. So, it's important to understand Valley fever in these groups of people so that people know about the risks for it if they live in or travel to an area where the fungus lives.

[Sarah Gregory] Okay, so tell us more about your project, starting with the states in which you collected data and how you went about collecting that data.

[Kaitlin Benedict] Valley fever is now a reportable disease in 25 states, so those state and local health departments are already routinely collecting basic demographic information on patients with the disease and sending it to CDC. We developed a questionnaire for health departments to use to interview these patients over the phone to get more details that aren't normally collected on a regular basis or aren't collected in a systematic way. The types of things that we asked about included where the patients traveled, their symptoms, when and where they went to the doctor, whether they got treatment, and how long they were sick.

So, for this project, there were two main groups that we wanted to describe: The first group was people who live in Nevada, New Mexico, or Utah, because the fungus lives in the environment in at least part of these states. But Valley fever isn't as common there as it is in Arizona or California. The second group was people who live in states outside the Southwest, in states where we don't think the fungus lives, so places like Minnesota and Wisconsin. And these people got Valley fever after traveling to an endemic area. About half of those people were "snow birds," or people who lived for part of the year in Arizona.

[Sarah Gregory] Why should this information matter to people?

[Kaitlin Benedict] We want people to know about the risk of getting Valley fever if they live in or visit an area where the fungus lives in the environment. That way, if they develop symptoms, they can tell their doctor where they traveled and get diagnosed quickly. Some of the patients we describe in this paper had long delays in getting their illness diagnosed. We want people to get diagnosed quickly so that they can get the right treatment and avoid inappropriate treatments.

[Sarah Gregory] What are some challenges faced by patients seeking treatment for illnesses that turn out to be Valley fever? What kind of testing is available?

[Kaitlin Benedict] The symptoms of Valley fever can be the same as other conditions, like bacterial pneumonia, so it can be difficult to diagnose sometimes. Lots of people get antibiotics for a suspected bacterial infection before being diagnosed with Valley fever. It's not possible to diagnose it based only on the symptoms; you need a lab test. Usually, it's a blood test but a doctor might take a sample of respiratory fluid or tissue for culture, depending on the part of the body that's affected. The cultures can take a long time to get a result, and even the blood test can take several days. CDC has been working with companies to help validate rapid diagnostic tests that could give a result in a few hours, which we hope will help doctors diagnose patients faster and get them the right treatment.

[Sarah Gregory] You noted that many Valley fever patients are misdiagnosed and mistakenly prescribed antimicrobials. Does this make the condition worse?

[Kaitlin Benedict] Good question. In this study, 70 percent of patients said that they were misdiagnosed and, of those, 83 percent got antibacterial medication, which is similar to what we've seen from other studies. Antibacterials won't make Valley fever any better, since it's caused by fungus, not bacteria. And there can be side effects from taking antibacterials, things like rash, yeast infections, diarrhea, and severe allergic reactions. And, of course, another concern for giving people unnecessary antibacterials is that it can promote resistance.

[Sarah Gregory] I believe I've heard that, once you have it, Valley fever, you can't get it again. Is this right?

[Kaitlin Benedict] Yeah, that's usually the case, although a small proportion of people can develop a chronic infection or they can have a relapse after getting better.

[Sarah Gregory] What's the best way to help Valley fever patients receive better treatment?

[Kaitlin Benedict] The best way to help Valley fever patients get the best treatment is by diagnosing them early. If they get diagnosed early, they can be managed better. For some people, the symptoms will go away on their own, without treatment, in a few weeks or months. It's not always clear if antifungal treatment makes symptoms better for the mild to moderate forms of coccidioidomycosis, but people who are at high risk for developing the severe forms, like people with weakened immune systems, usually need prescription antifungal treatment, and people with severe infections always need antifungal treatment.

[Sarah Gregory] Okay, Kaitlin, tell us about your job at CDC and why you're interested in this research.

[Kaitlin Benedict] I'm an epidemiologist with the Mycotic Diseases Branch. Our group's goal is to prevent illness and death from fungal diseases. And one of the most important ways that we know how to do this is by raising awareness about these diseases, because many people don't know about them. We know that many fungal infections are widely underdiagnosed, so we want patients and clinicians to think fungus as a possible cause when there are symptoms of infection. Valley fever is a priority for us, and we want to better understand who's getting sick and why. This helps us identify additional ways that we can raise awareness and help reduce delays in people getting diagnosed and treated, which can lead to better outcomes for patients.

[Sarah Gregory] Well, thank you, Kaitlin. Listeners can read the August 2018 article, "Enhanced Surveillance for Coccidioidomycosis, 14 US States, 2016," online at [cdc.gov/eid](https://www.cdc.gov/eid).

I'm Sarah Gregory for *Emerging Infectious Diseases*.

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