

# Coccidioidomycosis: The Importance of Clinical Recognition

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Since 2004, the number of coccidioidomycosis cases in Los Angeles County has increased substantially. Laboratory and clinically confirmed cases of coccidioidomycosis, also known as “Valley Fever,” typically numbered between 21 and 80 cases per year since 1973. However, 133 cases occurred in 2004 and started an upward trend that reached 306 cases in 2011 (Figure 1).

Between two 4-year time periods, 2000-2003 and 2008-2011, 19 of the 24 health districts of the County of Los Angeles have had at least a 100% increase in cases. The average of these increases is 458% with a range of 100% to 1,500%. Most cases have occurred in the northern area of the county, specifically Antelope Valley, West Valley, and San Fernando Valley.

The Centers for Disease Control and Prevention reported in its March 29, 2013, *Morbidity and Mortality Weekly Report* that coccidioidomycosis case reports have dramatically increased during 1998 to 2011. Arizona, California, Nevada, New Mexico, and Utah, where the fungi that cause the disease are endemic in the United States, reported an overall 260% increase between 2000-2003 and 2008-2011. Individually,

Arizona, which reports the highest number of cases in the nation, had a 332% increase, and California had a 149% increase.

**Transmission.** Coccidioidomycosis is typically caused by the inhalation of spores from fungal species belonging to the *Coccidioides* genus. It is not transmitted person to person. The fungi are endemic to the southwestern United States (including Texas) and parts of Central and South America. Commonly found in the soil of arid to semi-arid environments with low rainfall, long hot seasons, and mild winters, the fungi infect people during strong winds, dust storms, building construction, agriculture, earthquakes, and archaeological digs. Exposure to airborne dust or soil and travel to endemic areas including Kern County, Ventura County, Arizona, the Central California Valley (San Joaquin Valley), and Antelope Valley should be noted.

**Clinical Picture.** About 60% of infected people do not develop any symptoms. One to four weeks after exposure to the spores, 40% of people become ill (see Box 1). Most experience a primary and often self-limited infection presenting as a flu-like illness, fatigue, cough, chest pain, headache, other body aches and pains, fever, or rash. A small percentage of symptomatic individuals develop chronic pulmonary disease.

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**Figure 1. Annual Coccidioidomycosis Incidence (N=3,296) in LA County, 1973-2011**



Except for an outbreak in 1992-1994, the annual number of cases ranged from 21 to 84 between 1973 and 2003. Increasing numbers of cases have been seen since 2004.

Some of these individuals also experience disseminated disease that can involve multiple organ systems, be debilitating, last life-long, and lead to outcomes such as meningitis and death. Disseminated disease is associated with male gender, immunosuppression, pregnancy, lack of previous exposure to an endemic area, race (African American, Filipino American, Native American, Asian), and age (infants and adults over 65 years old).

**Diagnosis.** Given the increasing number of cases and the non-specific presentation of primary disease, clinical suspicion is critical in diagnosing and treating coccidioidomycosis. There are many laboratory tests that can be ordered to identify the disease, but a clinician must carefully first assess symptoms along with the patient's exposure and travel history to determine if laboratory tests are warranted (see Box 1). Serology is recommended for diagnosis. Even in the areas with the highest number of cases, missed diagnosis is a recognized problem that contributes to mounting unnecessary costs in secondary visits, inappropriate treatment, and hospitalization. Patients testing positive should be informed and counseled appropriately.

**Treatment.** Antifungal medication (e.g., amphotericin B, itraconazole, or fluconazole) is recommended for disseminated disease or primary pulmonary infection in patients with increased risk for disseminated disease.

**Education.** Awareness and education of coccidioidomycosis among primary care practitioners is a key first step toward improving clinical recognition, risk assessment, patient counseling, treatment effectiveness, and preventing disease progression.

- For more information on coccidioidomycosis, visit the “Valley Fever Center for Excellence” at <https://www.vfce.arizona.edu/ValleyFeverInPeople/FAQs.aspx>.
- Training and free continuing medical education credit may be obtained at <https://www.vfce.arizona.edu/clinicians/FreeOnlineCME.aspx>.
- For real-life stories about how coccidioidomycosis has affected individuals and for more information about the latest developments, visit the “Just One Breath” reporting series at <http://www.reportingonhealth.org/valleyfever>.

### Mandatory Reporting in Los Angeles County

The Los Angeles County Department of Public Health urges all health care providers to be aware of coccidioidomycosis, especially among patients with community-acquired pneumonia continuing for more than 3 or 4 weeks or with infections (e.g., meningitis or skin, bone, or joint infections) where the cause has not been identified. To help target intervention and prevention efforts from a population perspective, all cases meeting the clinical and laboratory criteria (see Box 1) must be reported to the department.

#### BOX 1

### Coccidioidomycosis Clinical Signs

A patient with coccidioidomycosis can present with any of the following clinical signs and symptoms:


- Influenza-like signs and symptoms, fatigue, cough, fever, profuse night sweats, loss of appetite and weight, chest pain or discomfort, generalized muscle and joint aches (particularly of ankles and knees), headache
- Pneumonia or other pulmonary lesion diagnosed by chest radiograph
- Erythema nodosum or erythema multiforme rash
- Involvement of bones, joints, or skin by dissemination
- Meningitis
- Involvement of viscera and lymph nodes.

### Laboratory Testing

Any of the following laboratory tests can confirm coccidioidomycosis:

- Culture, histopathologic, or molecular tests for *Coccidioides* species
- Positive serologic test for coccidioidal antibodies in serum, cerebrospinal fluid, or other body fluids by
  - Detection of IgM by immunodiffusion, enzyme immunoassay (EIA), latex agglutination, or tube precipitin
  - Detection of IgG by immunodiffusion, EIA, or complement fixation.

To file a report, contact the Communicable Disease Reporting System at (888) 397-3993; submit a Confidential Morbidity Report (CMR) Form, which may be downloaded at [www.publichealth.lacounty.gov/acd/reports/CMR-H-794.pdf](http://www.publichealth.lacounty.gov/acd/reports/CMR-H-794.pdf); or log on to the Visual CMR online system (restricted to designated persons). The report may also be faxed to (213) 482-4856.

For more information or questions regarding coccidioidomycosis, call (213) 240-7941. 

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