

# epiTRENDS

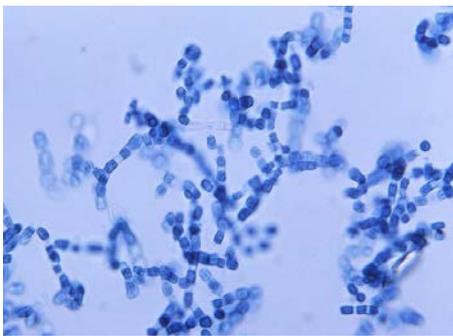
A Monthly Bulletin on Epidemiology and Public Health Practice in Washington

## Coccidioidomycosis

Vol. 19 No. 09

Recently reported cases of coccidioidomycosis suggest that the condition, which was previously thought of as occurring in our state's residents only among travelers to other regions, may be endemic to Washington State. This new information is changing the approach to surveillance for this disease.

### Epidemiology of Valley Fever



Hyphae with arthrospores  
CDC.gov

Coccidioidomycosis is a fungal infection commonly known as Valley fever or San Joaquin Valley fever. The disease was first recognized in Argentina, but was named after the San Joaquin Valley where clusters of unexplained pneumonia were occurring in the early 1900s which were later attributed to infection with *Coccidioides*. Coccidioidomycosis can also affect animals.

There are two similar coccidioidal species, *Coccidioides immitis* and *C. posadasii*. These organisms have a somewhat complicated lifecycle. Under adverse conditions the environmental mycelial form can produce environmentally resistant barrel-shaped arthrospores. This form can infect a host and develop into non-infectious spherules. The spore-forming mycelial form is not found in tissue, so persons with coccidioidomycosis are not considered communicable to others.

A majority (~60%) of infected persons do not have a recognized illness, although an immune response can be demonstrated. When infections are symptomatic, pulmonary disease is typically present although localized skin and tissue infections or disseminated disease including meningitis can also occur. Severe, disseminated, or chronically persisting infection may

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require antifungal treatment. Risk of infection and of severe illness is higher for certain groups:

- Immunosuppressed (HIV infection, organ transplant, certain immunosuppressing medications or conditions)
- Pregnant
- Diabetic
- Black or Filipino
- Age over 60 years

Exposure is primarily through inhalation of dust contaminated with fungal spores. Clusters of cases have been associated with major exposures such as: soil excavation, dust clouds (following landslides caused by earthquakes), and laboratory work with *Coccidioides* cultures. Often, individual coccidioidomycosis cases have not had a specifically identified exposure other than vacationing in a highly endemic region. Less commonly, direct inoculation of fungal spores into tissue, such as an injury during outdoor activity, can result in localized infections of the skin, soft tissues, or bones.

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### ***epi*TRENDS Monthly Posting Alert**

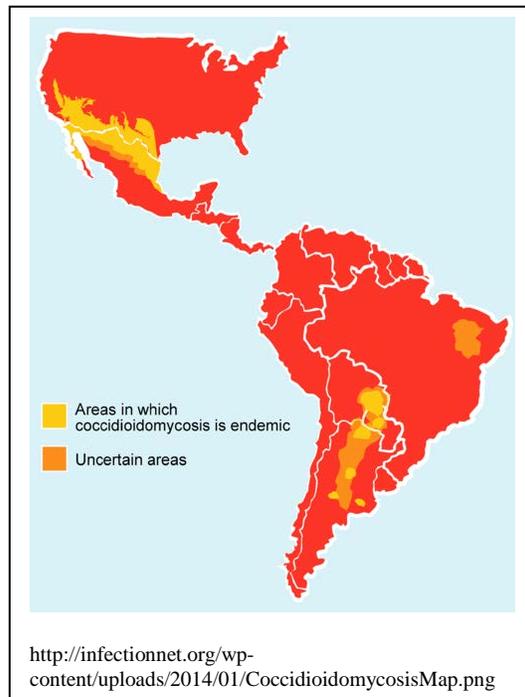
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Choose the option to join the listserv. Enter your name and email address.

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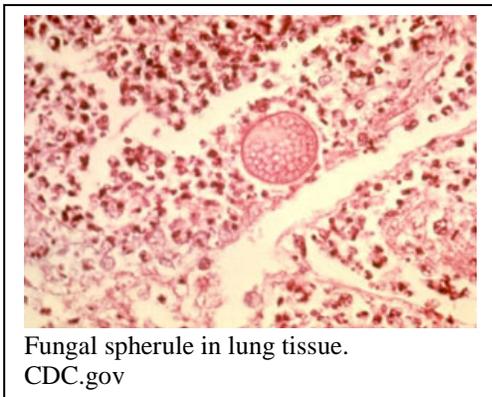
The organism occurs in soils in drier regions of the Western Hemisphere, and was previously considered endemic only in the southwestern United States, Mexico, Central America, and South America. Recent investigations identified case patients infected with *C. immitis* who likely had exposure within Washington State in south-central counties. Subsequent environmental investigations by Department of Health isolated the fungus from soil samples taken in these counties. Genotyping of the soil isolate was identical to a clinical isolate from one of the patients, confirming a local exposure.



### **Diagnostic Tests**

There are several commercial tests available to a clinician with a suspect coccidioidomycosis case including: serology; histopathology;

and culture of material or tissue from an affected organ. Other tests, such as urine antigen and PCR assays, are not as easily accessed and their results may not be reproducible. Available tests may have low sensitivity and can be unreliable if obtained too early in the progression of illness or in an immunocompromised person. Development of detectable levels for IgM may take weeks and for IgG can take months. If there is high clinical suspicion for coccidioidomycosis but initial tests are negative, retest the patient and include any appropriate imaging in the evaluation (e.g., chest x-ray or brain scan). Enzyme immunoassay (EIA) is more sensitive but less specific while immunodiffusion is more specific but less sensitive, so sequential tests may be needed in evaluating a patient.



For suspected coccidial pulmonary disease, obtain a chest x-ray, serology, and sputum fungal culture. Also consider obtaining an EIA screen for IgM and IgG. If results are positive, obtain immunodiffusion and then complement fixation testing. For suspected coccidioid meningitis, collect cerebral spinal fluid (CSF) for culture and IgM testing. Consider an MRI scan of the brain. Tissue histopathology using special stains may be appropriate for evaluating some patients.

### Surveillance in Washington

Coccidioidomycosis can be reported to Department of Health as a rare disease of public health significance. There are cases almost every year of Washington residents who were presumably infected during travel in southwestern states, typically a person who spends winter months in that area. Since 2010, there have been six cases with likely in-state exposures, including most recently one case from late 2013 and two reported during 2014. The six cases all had exposures in the south-central region of the state, which is also where the positive soil samples were obtained, and had no recent traveled outside of Washington.

In order to better understand this emerging fungal disease in our state and to aid in identification of locally-acquired infections, Washington State Department of Health Office of Communicable Disease Epidemiology is updating the surveillance strategy for coccidioidomycosis. Clinical laboratories have been asked to submit **all** *Coccidioides* isolates from Washington State residents. These will be forwarded to the Centers for Disease Control and Prevention for sequencing to determine if an isolate most resembles strains from Washington or from southwestern states. In addition, a newly developed [case report form for coccidioidomycosis](#) has been posted on our Notifiable Conditions page. The form is not available for electronic reporting, so the case should be entered as Rare Disease of Public Health Significance in PHIMS and the paper case report form faxed to Office of Communicable Disease Epidemiology. The assistance of local health jurisdictions in

The image shows a detailed case report form for Coccidioidomycosis. The form is organized into several sections:
 

- Header:** Includes fields for LHA file ID, Date, DOH file ID, Date Received, LHA Classification, Confirmed/Probable, and DOH Classification.
- REPORT SOURCE:** Fields for LHA notification date, investigation start date, and Reporter information (name, phone, HCP name).
- PATIENT INFORMATION:** Fields for Name (last, first), Address, City/State/Zip, Ethnicity, Race, and other demographic data.
- CLINICAL INFORMATION:** A large section with checkboxes for symptoms and clinical findings such as cough, weight loss, night sweats, and chest pain.
- LABORATORY:** Fields for Laboratory name, Collection date, and Source.

this surveillance is essential to improve understanding of coccidioidomycosis in Washington.

### Resources and References

Coccidioidomycosis acquired in Washington State:

<http://cid.oxfordjournals.org/content/56/6/847.full.pdf+html>

*Coccidioides* from soil in Washington:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6320a3.htm>

Notifiable conditions reporting in Washington (including report form):

<http://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/NotifiableConditions/ListofNotifiableConditions>