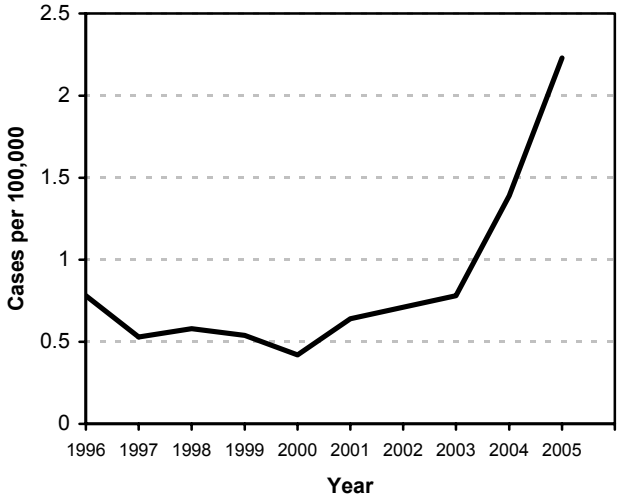
COCCIDIOIDOMYCOSIS

CRUDE DATA	
Number of Cases	214
Annual Incidence[a]	
LA County	2.23
California	N/A
United States	N/A
Age at Diagnosis	
Mean	31
Median	50
Range	7-93 years
Case Fatality	
LA County	7%
United States	N/A

[a] Cases per 100,000 population.

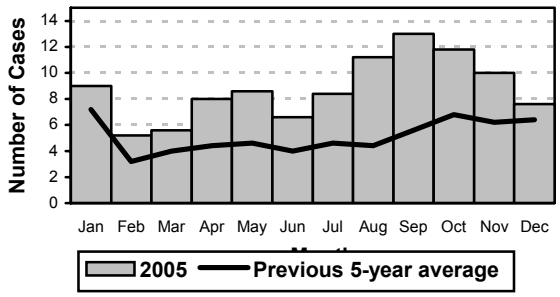
Figure 1
Coccidioidomycosis
Incidence Rates by Year of Onset
LAC, 1996–2005



DESCRIPTION

Coccidioidomycosis, or Valley Fever, is a common fungal disease transmitted through the inhalation of *Coccidioides immitis spores* that are carried in dust. Environmental conditions conducive to an increased occurrence of coccidioidomycosis are as follows: arid to semi-arid regions, dust storms, lower altitude, hotter summers, warmer winters, and sandy, alkaline soils. It is endemic in the southwestern US and parts of Mexico and South America. Southern California is a known endemic area.

Figure 2
Coccidioidomycosis
by Month of Onset
LAC, 2005 (N=214)



Most infected individuals exhibit no symptoms or have a mild respiratory illness, but a few individuals develop a severe illness such as pneumonia, meningitis, or dissemination when the fungus spreads to many parts of the body. Because of the wide range of clinical presentations, only the most severe cases are usually reported to the health department. Laboratory diagnosis is made by demonstrating the fungus with microscopic examination or culture or by serologic testing. Blacks, Latinos, Native Americans, Filipinos, males, pregnant women, the very young (<5 years), elderly, and immunocompromised individuals are at high risk for severe disease.

DISEASE ABSTRACT

- The incidence rate for coccidioidomycosis has been increasing since 2000, which was at its lowest point in 10 years in LAC.

- Cost in terms of disease severity and hospitalization was substantial. The incidence of coccidioidomycosis were greater than last year, though the case fatality was lower. Young adults, males, Blacks, and residents of the West Valley and Antelope Valley were at higher risk for disease.

STRATIFIED DATA

Trends: The incidence rate was 2.23 cases per 100,000 population for 2005 which was higher than last year (Figure 1). The increase in LA County is largely due to an increase of cases in Antelope Valley which had an incidence rate of 23.0 compared to last year of 14.9.

Seasonality: The highest number of cases per month was observed in the 3rd quarter and gradually decreased in the last month of the year. The number of cases per month through most of 2005 was well above the previous five-year average (Figure 2). Comparing cases from the summer months August-October 2005 to a 5-year previous average of cases for the same time period, LAC observed an increase of 542% in 2005 (77 vs. 12.0 cases). Cases commonly occur in the summer after a rainy winter or spring, especially after wind and dust storms.

Age: For 2005, males had an overall higher incidence like all previous years, and their ages predominated in the young adult age groups. The greatest numbers of cases reported were in persons aged 15-34 and 35-44 years (Figure 3) which was same from previous years. The greatest incidence rate was in the 45-54 age group (3.8/100,000). The youngest case was 7 years of age.

Sex: The male-to-female rate ratio was 1.8:1. The mean age for males was 48.5 years and for females was 46 years (Figure 3). One female reported being pregnant during infection. The most commonly reported occupations among males (13%) were construction and/or maintenance positions.

Race/Ethnicity: The highest incidence rate of 3.3 cases per 100,000 was in the White population (n=96), Latinos (n=70), Blacks (n=28), Asians (n=15) and other (n=2). Whites and Latinos had the greatest number of cases. Race was unknown in 3 cases (Figure 4).

Location: Antelope Valley (n=79) and West Valley (n=52) districts had the highest number of cases reported (61% of the total). This has added significance because the incidence rate per 100,000 in Antelope Valley is 23.0 and West Valley is 2.8,

Figure 3
Coccidioidomycosis
Incidence by Age and Sex
LAC, 2005 (N=214)

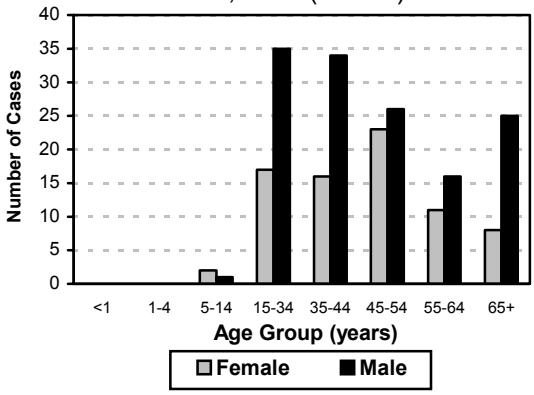


Figure 4
Coccidioidomycosis
Percent Cases by Race/Ethnicity
LAC, 2005

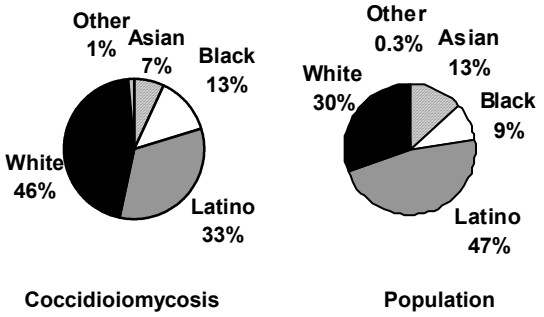
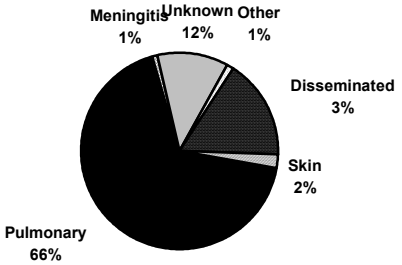


Figure 5
Coccidioidomycosis
by Infection Site
LAC, 2005 (N=214)



compared to the overall LAC incidence rate of 2.23. Four cases (1.8%) were incarcerated in areas of high endemicity.

Travel: Travel history was available for 144 cases. Of those with a travel history, 82 cases (57%) reported travel within four weeks before onset of illness, while 43% (n=62) reported no travel. Of those traveling, many reported multiple travel destinations: 76% (62/82) traveled within California including San Fernando Valley, Central Valley and adjacent counties of Riverside and Imperial; 39% (n=32) traveled outside California to Arizona, Iraq, Nevada, Mexico, Taos, and Europe, and 3.7% (n=3) cases reported travel within and outside of California to other locations. The fungus is known to be endemic in most of these areas.

Underlying Disease: One hundred forty-four cases were assessed for underlying disease. Eighty-one cases (56%) reported having an underlying disease, 21% (n=30) cases were diabetic, 11% (n=16) had a malignancy, 3% (n=5) had HIV, 3%(n=4) had organ transplants and 18% (n=26) were coded as other, for example asthma and kidney problems. 44% (n=63) had no reported disease history.

Severity of Disease: Sites of infection were reported as primary pulmonary 68% (n=145), disseminated 16% (n=35), meningitis 1% (n=2), skin 2% (n=5), and other (chest cavity mass, lymph node, neck node) 1% (n=2); in 12% (n=25) of the cases infection site was not stated (Figure 5). 24% of the cases were culture-confirmed (n=46) and 96 cases were diagnosed by serological, histopathological, or molecular evidence. Some cases had multiple labs available for diagnosis. Of the 195 cases where information was available, 73% (n=142) were hospitalized. Fifteen cases died. The 2005 case fatality rate (7%) was lower than last years rate (9.8%).

COMMENTS

In LAC, the 2005 incidence for coccidioidomycosis was higher than the previous year. Overall, the rate has been increasing since 2000. The significant increase started in the fall of 2003. The wildfires in southern California may have contributed by destroying vegetation and increasing dust exposure. This followed by warm temperatures and Santa Ana winds were ideal conditions for disseminating *Coccidioides immitis* spores. Although the number of cases reported is small compared to other diseases, the costs in terms of disease severity, hospitalization, and mortality are great. As in past years, residents of the Antelope Valley and the West Valley are at higher risk for severe disease. These districts are more arid than the rest of the county. Also more young and middle-aged adults, especially males, were affected instead of the very young and old, who are normally at high risk for illness. This may reflect an increased likelihood for this age group to have outdoor recreational or occupational exposure in areas of high risk.

During 3rd quarter of 2005, ACDC noted an abrupt increase in reports of coccidioidomycosis both false and confirmed. Much of this increase was due to automated laboratory reporting by ARUP laboratories. However, the ratio of true to false case (20:80) in ARUP lab reports has remained essentially unchanged over the last nine quarters. Automatic lab reporting necessitated an increase in epidemiologic follow-up, which required all cases to have an appropriate clinical symptoms and laboratory reporting for confirmation. This resulted in an increase in the number of false cases usually due to single IgG serologies. The reason for the large increase in confirmed cases remains theoretical. Record amount of rainfall in the beginning of 2005, followed by a very dry season, are conditions conducive to fungal growth. Additionally, the population of the Antelope Valley, where the majority of cases are located, continues to grow and provide a naïve population to an endemic area. These risks, in combination with increased construction activities, may be responsible for the increased incidence.

In 2005 the following 10 counties were most severely struck by Valley Fever in California: Kern County (n=1584) with incident rate of 205.6/100,000 (Bakersfield and surrounding areas) had the most reported cases followed in descending order LA, Tulare, Fresno, San Luis Obispo, Kings, Riverside, Orange, San Bernardino and Madera. Thirty-four of 61 counties in CA reported Valley Fever cases.

PREVENTION/INTERVENTION

Currently no safe and effective vaccine or drug to prevent coccidioidomycosis is available; prevention lies mainly in dust control such as planting grass in dusty areas, putting oil on roadways, wetting down soil, air conditioning homes, and wearing masks or respirators. Other options may be to warn individuals who are at high risk for severe disease not to travel to endemic areas when conditions are most dangerous for exposure.

Since coccidioidomycosis is treatable, emphasis should also be placed on preventing progression of disease by rapid diagnosis and treatment by physicians. Residents, especially those at high risk, should be encouraged to seek care early if they develop signs or symptoms of disease.

A health advisory was sent via email in May 2005 to physicians and health care facilities regarding the increase in coccidioidomycosis and information about the disease.

An article published April 12, 2006 the Federal Government is backing the first potential cure for Valley Fever; Nikkomycin Z it has been shown to kill the fungus in mice. This medication is not in the market yet it needs commercial partners to test.

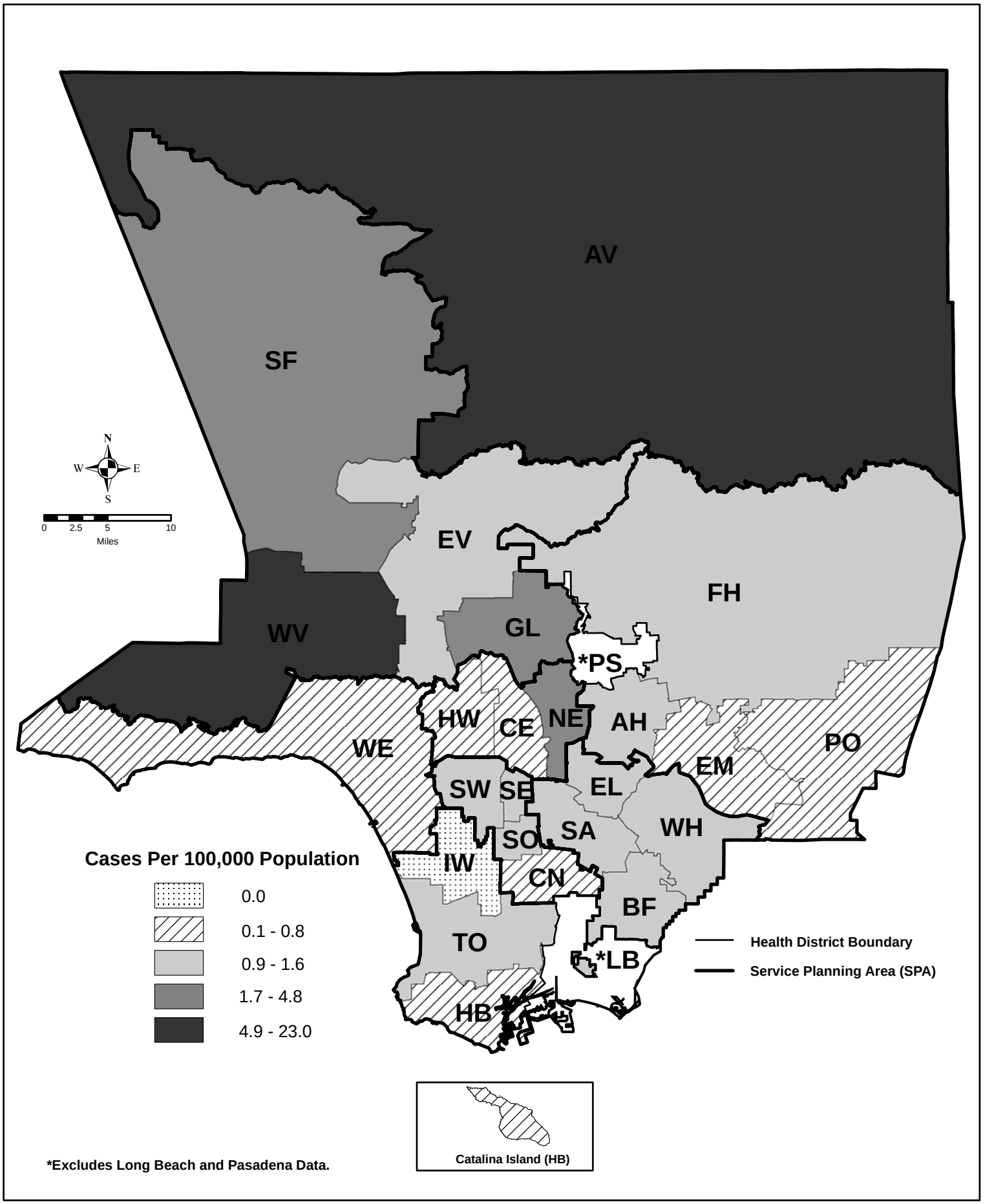
ADDITIONAL RESOURCES

National Fire Weather Report 2003 by Larry Van Bussum, National Weather Service, Boise, ID See report at: http://fire.boi.noaa.gov/FIREWX/AnnualReport/2003NationalReport.pdf

More information about coccidioidomycosis is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/coccidioidomycosis_t.htm

Kirkland TN, Fierer J. Coccidioidomycosis: A reemerging infectious disease. Emerg Infect Dis 1996; 2(3): 192–9.

Map 3. Coccidioidomycosis
Rates by Health District, Los Angeles County, 2005*



*Excludes Long Beach and Pasadena Data.