Coccidioidomycosis in Texas: Valley fever must be reportable, recognized, and taught

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INTRODUCTION

Coccidioidomycosis, better known as Valley fever (VF), is a fungal infection caused by the soil-borne *Coccidioides* fungi (*C. immitis* and *C. posadasii*) and is contracted through inhalation of fungal spores released into the air when contaminated soil is disturbed. The reader is directed to other sources[1,2] for detailed information on clinical aspects of its diagnosis and treatment. This article highlights important issues in the public health and public policy aspects of this emerging infectious disease and its causative agents.

Historically endemic to dryland regions of the Southwest United States, particularly California (VF named after California's San Joaquin Valley) and Arizona, the borders of *Coccidioides*' endemic region are expanding due to climate changes, increased soil exposure, and growing populations in these dry regions. Today, VF is also prevalent in other southwestern states, including Texas. However, unlike many of these newly endemic states, coccidioidomycosis is not recognized as a reportable disease in Texas other than in El Paso County, despite Valley fever's increasing presence. Unfortunately, this infection remains underdiagnosed, misdiagnosed for other respiratory illnesses, mistreated, and is barely present in medical education, and consequently some patients suffer delayed diagnoses, failed treatments, and even death. This situation makes Valley fever an urgent public health concern in Texas. Texas must mandate reporting, increase coccidioidomycosis training in medical and public health education, and equip medical providers with the appropriate tools to recognize and treat this growing infection.

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VALLEY FEVER'S EXPANDING FOOTPRINT IN TEXAS

Cases of VF have substantially increased in states such as California[3,4] and Arizona[4] and are predicted to increase in the future, likely resulting from increased occupational exposures such as expanded land development in soils that are cocci reservoirs and environmental/climatic factors including wind, drought, temperature, and precipitation that increase the spread of the fungi and incidence of disease.[3,5] Historically VF is a Southwestern regional threat, but recent models demonstrate that climate change is likely to expand the endemic area of *Coccidioides* species resulting in further increase in disease burden in surrounding states including Texas.[6] Increased hospital visits for respiratory illness in West Texas, many of which may be misclassified due to lack of mandatory reporting, suggest that coccidioidomycosis is already affecting Texans at higher rates than currently recognized.[7]

As the burden of VF cases increases in the Southwest, and population increase and climate change continue to modify the environment, it is essential to identify the factors that are expanding the incidence in endemic regions. Key environmental drivers of Valley fever are known to be drought, wind, high temperatures, and sudden precipitation.[3,6] These conditions, especially when paired with soil disturbance, have been directly linked to rising VF incidence and are not limited to Arizona and California.[8] The US southwest, including Texas, is steadily trending toward warming, dryness, more dust storms, more evaporation, less snow and ice, decreased precipitation, and more frequent and severe droughts and earlier springs.[3] West Texas experienced frequent and extreme dust storms in spring 2025, and Central Texas experienced sudden and extreme rainfalls and floods in summer 2025; these disasters presented not only major human health, safety, and economic losses

but also soil and potential fungal spore disruption. Rain after drought can enable the dormant fungus to begin growing at an exponential rate.[3] These recurrent phenomena in Texas suggest that the state is prone to increased VF incidence and a possible silent rise in VF cases.

Occupational exposure in jobs that disturb soil are an overlooked but prominent driver of Valley fever and include construction workers, farmworkers, military personnel, oil and gas industry workers, etc.[7,9,10] Border cities such as El Paso and Laredo, which have high concentrations of these occupations, are seeing documented increases of VF cases.[9] According to the National Academy of Sciences, over half of reported Valley fever outbreaks from 1940 to 2015 resulted from occupational exposure.[11] Without mandatory reporting and surveillance, workers in these occupations remain vulnerable to coccidioidomycosis and their exposures under-recognized by Texas public health policy and medical authorities.[7]

Underdiagnosis and the Knowledge Gap

Because symptoms frequently mimic pneumonia, influenza, or COVID-19, Valley fever is often misdiagnosed even in endemic areas resulting in diagnostic delays and inappropriate antibiotic use.[12] It is estimated that about 70% of VF patients receive an alternate diagnosis and more than half of the patients require three or more visits before getting tested for coccidioidomycosis.[6] More than 80% of VF patients received antibiotics due to misdiagnosis, and close to half of VF patients were diagnosed with a two months or more delay.[6] Delayed diagnosis and incorrect treatment are commonly present even in endemic areas, where awareness among providers and patients is expected to be higher.

Studies have shown only a small proportion (2%–13%) of patients with appropriate symptoms in an endemic area were tested for coccidioidomycosis.[4] This not only indicates the unfamiliarity of physicians with Valley fever but also suggests that the disease is greatly underreported. It has been reported that physicians infrequently test for coccidioidomycosis and do not feel enough confidence in correctly diagnosing or treating the disease.[6] Due to the frequent misdiagnosis and major delays, the estimated true burden of VF is 10–18 times higher than current reports.[10]

Coccidioidomycosis is not an easy infection to diagnose; there are multiple barriers to accurate diagnosis. Valley fever has a wide range in severity, from asymptomatic to disseminated infection and death. About 60% of the infected people are asymptomatic.[13] The infection can present with long latent periods (weeks) and lack of suspicion of infection. At many times the presentation of Valley fever can be a simple cough which leads to patient delays in seeking care. Testing can be complex and guidelines are inconsistent due to insufficient public health prioritization and policy.

Physicians trained and working in endemic regions in particular should become familiar and stay up to date with coccidioidomycosis, its alarming increase, confusing symptoms, specific diagnostic tests and antifungal treatments. Yet there is a clear gap in medical education and public health education that leads to potential harmful effects. Many medical education resources do not focus on VF's more common respiratory symptoms that mimic pneumonia, COVID-19, and other respiratory illnesses. Instead, they focus on the rarer disseminated infections of *Coccidioides* and forget to teach the common symptoms that arise earlier in the disease process. This prevents providers from considering VF in their differential diagnosis. Especially in high risk and historically underserved communities that are widespread in the Southwest, this gap in medical education contributes to delayed care and worsens patient outcomes.[7] There is a critical need for improved VF education in medical and public health curricula, particularly in endemic regions with the highest burden.

Why Reporting and Surveillance Matter

Valley fever is already a reportable disease in 29 states, including all Western states except Idaho.[10,14] In contrast, Texas outside of El Paso County does not require case reporting, in spite of evidence of endemicity in a wide swath of the state, cases being increasingly identified, and environmental conditions changing in favor of disease transmission.[8,10] The

lack of reporting harms disease surveillance, future research, public health, physician and patient awareness, and eventually patient care and outcomes. Reportability is necessary to understand environmental drivers, allocate resources, and design interventions.[8] Currently, most of Texas lacks surveillance data entirely, with El Paso being the only region conducting local monitoring efforts.[9]

Several authors have raised the necessity of longitudinal assessment, routine surveillance, and statewide mandatory reporting of coccidioidomycosis in Texas.[15] More research on VF etiology and risk factors will require more comprehensive and accurate data about VF cases. However, lack of reporting of coccidioidomycosis in almost all of Texas means demographic data is not routinely gathered. Working with underreported data can lead researchers to dead ends and false conclusions about the etiology of VF in states such as Texas.

The vast majority of the literature about Valley fever calls for more research on almost all aspects of this disease and the fungi that cause it; this will not be possible without a solid foundation of reliable data. Otherwise, limited funding and poor public health planning for coccidioidomycosis will continue, it will remain an "orphan" disease,[5] and efforts to improve awareness of Valley fever will not reach the community. As VF's incidence grows in Texas, the state's blind eye to mandating infection reporting puts scientific research, medical providers, and public health at a disadvantage.

Policy and Educational Recommendations

Texas must immediately make Valley fever a reportable infection to allow statewide surveillance, detection, future prevention and community awareness. Without mandated case reporting, detection of patterns in infection and future research will be lost. Full and accurate reporting and monitoring will improve data and provide a strong basis for policymakers to advocate for improved resource allocation and education campaigns.

Equally as critical is the need for Texas medical and public health education to increase Valley fever training. The National Academy of Sciences and several researchers have called for sufficient medical education.[7,9–12] They emphasize that physicians frequently overlook VF in their differential diagnoses, especially in cases of prolonged respiratory illnesses that mimic pneumonia or COVID-19.

Awareness should also increase about demographic and occupational risk factors of VF. In Texas, coccidioidomycosis-related hospital visits were most common among Hispanic individuals, who represent a large portion of residents in endemic regions.[7] Hispanic patients had a prevalence ratio of 1.25, and non-Hispanic Black patients had a prevalence ratio of 1.51 compared to non-Hispanic White patients.[7] These disparities, along with the fact that men had higher rates of infection, likely due to occupational exposures,[7] should be highlighted in medical education, where demographic associations are commonly taught as diagnostic clues.

To close these gaps, VF should be formally included in medical curricula, residency training, and public health coursework, particularly in endemic and high-risk regions. The low awareness of coccidioidomycosis by healthcare providers in endemic areas is also thought to be related to the large number of practitioners in endemic areas who were trained elsewhere.[12] One way to combat this is for continuing medical education to be expanded to include Valley fever, so that physicians new to endemic areas can be trained, which should apply for any endemic and/or emerging disease. Valley fever stewardships can also be effectively integrated into medical school curricula,[16] which should lead to measurable improvements in clinical diagnoses.

Valley fever should also be considered an occupational health hazard for workers in construction, agriculture, and the military, as dust inhalation increases the risk of exposure to cocci.[17,18] In California, the state's Department of Public Health (CDPH) Occupational Health Branch and some local health departments including Kern County Public Health have active Valley fever awareness and prevention programs; the CDPH's "couldbevalleyfever.org" web site includes toolkits, posters, and graphics for dissemination in the occupational setting (Figure 1), in both English and Spanish. A California state law (Assembly Bill No. 203 of 2019, Chapter 712) requires construction employers for jobs requiring substantial dust disturbance in

Figure 1. Posters and graphics from the California Department of Public Health's Valley fever Outreach Toolkit at its "couldbevalleyfever.org" site for use in occupational settings[19] (left) and community awareness[20] (right).

counties where *Coccidioides* is highly endemic, to train their employees every year on minimizing the risk of Valley fever. Similar programs such as worker training and personal protection should be considered in the occupational context in other endemic areas to reduce exposure and increase awareness of possible symptoms. Many workers in cocci-vulnerable occupations may not speak English, so training should be available in multiple languages.[9]

Patient education and public awareness for the community at large are also highly pertinent. Arizona's Department of Health Services (ADHS) has active programs for coccidioidomycosis and observes an annual Valley Fever Awareness Week to spread public awareness of the disease across the state, including to children. Messaging for the public should be concise and clear regarding the signs and symptoms of VF. If persons who live or work in or have traveled to endemic areas experience a cough, fever, and/or exhaustion lasting for more than two weeks, they should ask their health care provider about getting tested for VF. If they are outdoors and the weather becomes windy and gusty, they should either ensure that the nearby soil gets watered down or they should get out of large-scale dusty, dirty air.[21] The CDPH's public-facing Valley fever website also includes promotional graphics and materials with such messages for use in community settings (Figure 1).

Together these four initiatives–mandatory reporting, educational reform, occupational protection, and public awareness–are recommended steps toward improving preventative care against Valley fever in Texas.

Conclusion

Valley fever's incidence in Texas is rising, yet the state has fallen behind in surveillance, medical training, and clinical and public awareness. Without mandated case reporting or routine inclusion in diagnostic workups, the true burden of coccidioidomycosis in Texas remains obscured and public health response limited.

Making Valley fever a reportable disease in Texas, embedding it into medical and public health education, and improving occupational and public awareness of its occurrence and symptoms, especially in high-incidence areas, are necessary first steps toward earlier detection, improved outcomes, stronger preparedness and healthier communities statewide.

Keywords: Coccidioidomycosis; Texas; communicable diseases; public health surveillance; occupational exposure; medical education; climate change; delayed diagnosis; mycoses.

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References

1. Johnson R, Sharma R, Kuran R, Fong I, Heidari A. Coccidioidomycosis: a review. *J Investig Med*. 2021;69:316–23. doi:10.1136/jim-2020-001655
2. McHardy I, Barker B, Thompson G. Review of Clinical and Laboratory Diagnostics for Coccidioidomycosis. *J Clin Microbiol*. 2023;61:e01581–22. doi:10.1128/jcm.01581-22
3. Pearson D, Ebisu K, Wu X, Basu R. A Review of Coccidioidomycosis in California: Exploring the Intersection of Land Use, Population Movement, and Climate Change. *Epidemiol Rev*. 2019;41:145–57. doi: 10.1093/epirev/mxz004
4. Centers for Disease Control and Prevention (CDC). *Increase in reported coccidioidomycosis – United States, 1998–2011*. *Morb Mortal Wkly Rep*. 2013;62:217–21. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6212a1.htm
5. Lauer A. Coccidioidomycosis: Increasing Incidence of an "Orphan" Disease in Response to Environmental Changes. In: Hurst C, ed. *Modeling the Transmission and Prevention of Infectious Disease*. *Advances in Environmental Microbiology (AEM, Volume 4)*. Springer; 2017:151–85. doi:10.1007/978-3-319-60616-3_6
6. Schneider D. Coccidioidomycosis update and review. *Curr Emerg Hosp Med Rep*. 2023;11:1–9. doi:10.1007/s40138-023-00274-3
7. Mayfield H, Davila V, Penedo E. Coccidioidomycosis-Related Hospital Visits, Texas, USA, 2016–2021. *Emerg Infect Dis*. 2024;30(5):882–9. doi:10.3201/eid3005.231624
8. Gorris ME, Cat LA, Zender CS, Treseder KK, Randerson JT. Coccidioidomycosis dynamics in relation to climate in the southwestern United States. *GeoHealth*. 2018;2(1):6–24. doi:10.1002/2017GH000095
9. Howard M, Sayes C, Giesy JP, Li Y. Valley fever under a changing climate in the United States. *Environ Int*. 2024;193:109066. doi:10.1016/j.envint.2024.109066
10. Lee P, Swain D, Johnson R. Climate change and coccidioidomycosis. *JAMA*. 2025;333(11):997–8. doi:10.1001/jama.2024.27274
11. National Academies of Sciences Engineering and Medicine. *Impact and Control of Valley fever: Proceedings of a Workshop in Brief*. 2023. https://nap.nationalacademies.org/catalog/26928
12. Donovan F, Fernández O, Bains G, DiPompo L. Coccidioidomycosis: a growing global concern. *J Antimicrob Chemother*. 2025;80(Supplement 1): i40–i49. doi:10.1093/jac/dkaf002
13. Park BJ, Sigel K, Vaz V, et al. An Epidemic of Coccidioidomycosis in Arizona Associated with Climatic Changes, 1998–2001. *J Infect Dis*. 2005;191(11):1981–7. doi:10.1086/430092
14. Centers for Disease Control and Prevention (CDC). Reported Cases of Valley Fever. 2025. https://www.cdc.gov/valley-fever/php/statistics/index.html
15. Peterson C, Chu V, Lovelace J, Almekdash M, Lacy M. Coccidioidomycosis Cases at a Regional Referral Center, West Texas, USA, 2013–2019. *Emerg Infect Dis*. 2022;28(4):848–51. doi:10.3201/eid2804.211912
16. Keller S, Nassery N, Melia M. The case for curriculum development in antimicrobial stewardship interventions. *Antimicrob Steward Healthc Epidemiol.* 2022;2(e3):1–2. doi:10.1017/ash.2021.251
17. Sipsas N, Kontoyiannis D. Occupation, lifestyle, diet, and invasive fungal infections. *Infection*. 2008;36(6):515–25. doi:10.1007/s15010-008-8129-5

18. de Perio M, Matterna B, Sondermeyer Cooksey G, et al. Occupational coccidioidomycosis surveillance and recent outbreaks in California. *Med Mycol*. 2019;57(Supplement 1): S41–S45. doi:10.1093/mmy/myy031

19. California Department of Public Health (CDPH). Valley Fever Awareness And Outreach Toolkit. Valley Fever Could Be in the dirt and dust. 2025. https://www.cdph.ca.gov/Programs/CID/DCDC/PublishingImages/Valley%20Fever/VFPrev_DirtDust4.png

20. California Department of Public Health (CDPH). Valley Fever Awareness And Outreach Toolkit. Aches, pains & a fever that lasts Could Be Valley Fever. 2025. https://www.cdph.ca.gov/Programs/CID/DCDC/PublishingImages/Valley%20Fever/Social/Fatigue.png

21. Matlock M, Hopfer S, Ogunseitan O. Communicating risk for a climate-sensitive disease: a case study of Valley fever in Central California. *Int J Environ Res Public Health*. 2019; 16(18):3254. doi:10.3390/ijerph16183254