

RURAL AND ENVIRONMENTAL HEALTH: EXPLORING CHALLENGES AND SOLUTIONS

Addressing the Valley Fever Knowledge Gap in Arizona Primary Care

Rebecca R. Foley, MPH, BSN, DNP-FNP Candidate, University of Arizona, Tucson, AZ;
Patricia Daly, PhD, FNP-BC, ENP-BC, FAANP, College of Nursing, University of Arizona, Tucson;
Lori Martin Plank, PhD, FNP-BC, NP-C, GNP-BC, FAANP, FNAP, College of Nursing, University of Arizona, Tucson, AZ;
John Galgiani, MD, Valley Fever Center for Excellence; College of Medicine, University of Arizona, Tucson, AZ

Purpose: This project was designed to strengthen primary care provider (PCP) knowledge and confidence in Valley fever diagnosis, treatment, and management at a Southern Arizona community health organization.

Background: Coccidioidomycosis (Valley fever) is a fungal infection acquired by inhaling spores located in the dust of endemic regions. Arizona has the highest incidence of the disease in the nation, accounting for over half of all cases in the United States. Despite the fact that Valley fever (VF) is responsible for one third of all community acquired pneumonia (CAP) diagnosed in Southern Arizona, only 13% of Arizona PCPs appropriately test for the disease. Patients experience on average a one-month delay for diagnosis and receive 2-3 unnecessary courses of antibiotics. More than 80% of VF cases are initially misdiagnosed. This delay to diagnosis leads to increased incidence of complications, delayed specialist referral for high-risk patients, and increased healthcare costs. Primary care has been identified as an essential area for provider education intervention, as most VF patients will initially seek care with their PCP. Nurse practitioners (NPs) are a key population to include in this intervention, as more than 70% of Arizona NPs work in primary care settings.

Methods: Using the Ottawa Model of Research Utilization framework, this multilevel intervention employed a 30-minute, synchronous provider education session delivered via Zoom, including a virtual introduction to a local Valley Fever expert at the conclusion of the presentation. Educational content was developed from Infectious Disease Society of America (IDSA) clinical practice guidelines and the Valley Fever Center for Excellence (VFCE) training manual for PCPs. A pocket-sized handbook and clinician decision-making flowchart of the educational material was also provided. Following IRB approval, willing participants completed a retrospective post-then-pre designed survey assessing provider knowledge, attitudes, and practices related to VF diagnosis and management.

Results: Of the 31 providers in attendance, 19 (11 NPs, 3 physicians, 5 unspecified) returned the post-education evaluation survey. 40% had never diagnosed VF before. Only 6% reported testing according to national guidelines. After the educational intervention, statistically significant improvements were seen in provider confidence in ability to diagnose VF ($p = .001$), provider confidence in ability to treat VF ($p = .026$), knowledge of VF lab testing options ($p = .030$), and provider belief of VF as a problem in Arizona ($p = .011$). Modest improvements were also noted in knowledge of vaccine availability and Arizona health department notification requirements. Mean (SD) provider score was 83.4% (0.1%) on post-intervention VF knowledge assessment questions. Notably, only 20% of providers reported receiving prior VF education, regardless of whether they were trained in Arizona or out-of-state.

Conclusions and Future Implications: This project demonstrates an effective model for improving Arizona PCP confidence and knowledge in Valley fever management following a multitiered educational intervention. Further curricula development to include VF education and training in Arizona health professions programs is indicated. This is particularly important for NP programs, as 60% of Arizona-trained NPs choose to practice locally after graduation compared to 15% of Arizona-trained physicians.

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