

**Valley Fever Corridor Project
Annual Report
2010-2011**

**Valley Fever Center for Excellence
University of Arizona College of Medicine**



August 2011

Valley Fever Corridor Project: A multifaceted, public health action program Combating Arizona’s Valley Fever (Coccidioidomycosis) problem

Introduction

Valley Fever (Coccidioidomycosis), despite its high disease rate, still remains largely unknown to many Arizonans. Of the estimated 150,000 U. S. infections per year, approximately 60% occur in Arizona (1, 2) making this the focal point of the disease. Since the Arizona Department of Health Services made it a reportable disease in 1997, the rate of new Valley Fever cases has more than quadrupled over the last decade from 36 cases per 100,000 population in 1999 to 155 cases per 100,000 in 2009 (3). In 2010 the total number of reported cases reported was 11,888 (4), and this number could increase three fold as increasing awareness leads to more complete recognition and diagnosis by Arizona clinicians (5). More than 90% of the reported cases occur within a narrow 200 mile corridor generally following Interstate 10, stretching from North West Maricopa County to Green Valley in the southern part of Pima County (Figures 1 and 2, Table 1).

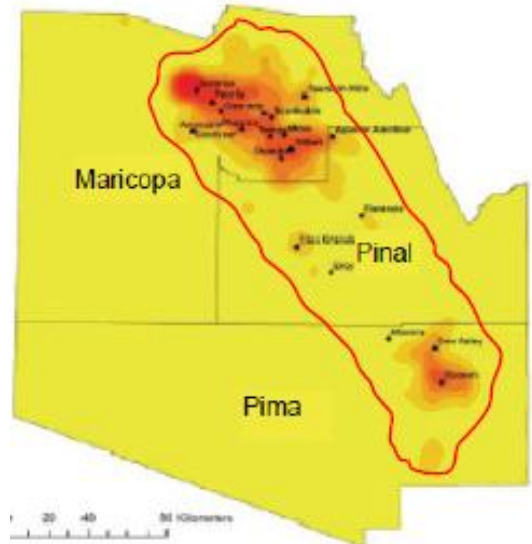


Fig 1. The Valley Fever Corridor on a map.

The high number of cases in Arizona is further complicated by delay in diagnosing the disease. Many patients with Valley Fever pneumonia are misdiagnosed as having bacterial infections and are prescribed useless courses of antibiotics prior to getting the correct diagnosis (6, 7). A recent questionnaire survey found that only 50% of the physicians in Arizona actually feel confident in their knowledge of treating Valley Fever cases (8). According to Tsang et al (9) the hospital costs in Arizona alone due to primary or secondary diagnosis of Valley Fever were approximately \$86 million in 2007 with a median average cost of \$30,000 per admission.

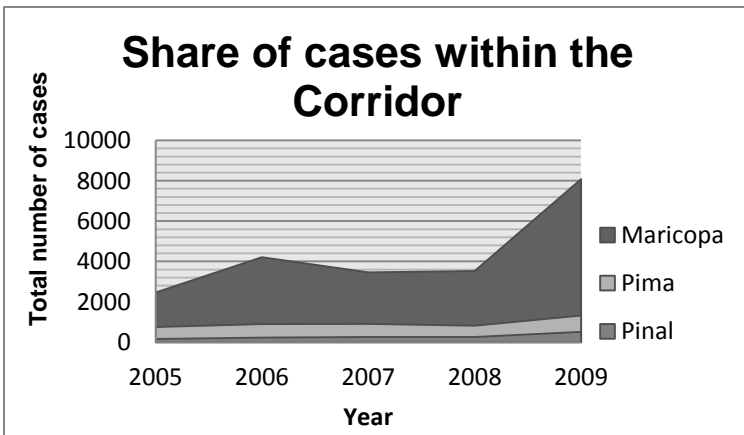


Figure 2. The distribution of cases among Maricopa, Pima and Pinal counties.

| | 2006 | 2007 | 2008 | 2009 | 2010 |
|----------------------------|-------|-------|-------|-------|-------|
| Total reported cases | 5535 | 4832 | 4768 | 10233 | 11888 |
| Ave. patient age | 51.09 | 51.06 | 50.91 | 48.21 | 47.74 |
| Percentage in the Corridor | 96% | 95% | 96% | 96% | 96% |



The problem of Valley Fever in Arizona deserves a concerted effort to raise the awareness about this disease in both the medical community and the general population so that current medical care is improved and new solutions for disease control and prevention are found. The Valley Fever Center for Excellence (VFCE), created by the Arizona Board of Regents in 1996, is in the unique position of being the only academic Center in the country focused explicitly on this one disease. For this reason, the Valley Fever Corridor Project was created as a public health program for the benefit of the greater Arizona community and supported by philanthropic contributions by people and other

organizations in Arizona and elsewhere. The primary objectives of the Corridor Project are to:

- i. Raise awareness and understanding of Valley Fever both among general community and clinicians in Arizona.
- ii. Enhance personal communication among Arizona clinicians to help their patients by creating new channels of communication.
- iii. Provide patients and their physicians a portal to learn of Arizona clinician's experiences with Valley Fever.
- iv. Help bridge the physical gap between the Valley Fever patients looking for a physician and the trained physicians available in close vicinity.

Shown in Figure 3 are the four principle components of the Valley Fever Corridor Project. In this Annual report is a description of the progress made in each of these areas.

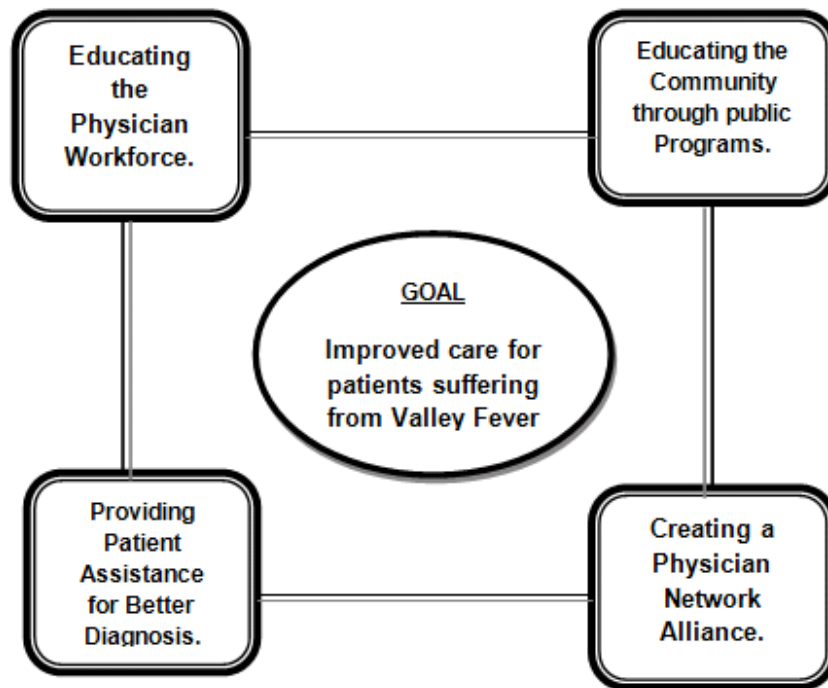


Figure 3. Components of the Valley Fever Corridor Project



Educating the Physician Workforce in Arizona

Developing and implementing educational modules for Clinicians.

The evidence provided by Chen S et al (8) justifies that the implementation of Valley Fever Continuous Medical Education (CME) programs in Arizona are an effective way to improve physician knowledge of disease diagnosis and management. The physicians who attended a Valley Fever CME session in past 12 months felt more confident about their knowledge and ability in dealing with Valley Fever cases. Hence the CME's provide a relatively cost effective way to enhance physicians' knowledge of the disease. In 2008 the VFCE in partnership with the Arizona Department of Health Services (ADHS) designed and implemented a Continuous Medical Education Program (CME) session for Clinicians in Arizona. Since 2008, CME programs have been offered every fall as part of Valley Fever week events. The participants, including Primary Care Physicians, Nurse Practitioners, Physician Assistants, and Public Health professionals, have positively reviewed and rated these sessions. In 2010 an advanced CME course for specialist physicians was also introduced and will be offered again this fall. To enhance the participation of the local medical community these sessions were eligible for American Medical Association (AMA) credit hours in collaboration with the College of Medicine at University of Arizona (UA) and were provided free or at a nominal charge. As of 2010, approximately 200 clinicians have been trained through these seminars in Maricopa, Pima and Pinal counties.

These sessions involve a series of talks delivered by Clinicians with years of experience in treating such infections. The participants are also provided with additional learning tools like brochures, leaflets, posters, etc. The talks focus on disease distribution, current diagnostic methods and available treatment options. These educational sessions are evaluated at the completion and

summary prepared is used for internal evaluation by the VFCE.

The Online CME Module.

An online version of a similar CME session for Primary Care Physicians was made available on the VFCE website www.vfce.arizona.edu. Unlike continuous face to face training sessions, these sessions are broken into multiple shorter sessions for the convenience of the participants. These educational sessions are also available for AMA credits free of charge for the healthcare community. As of June, 2011 a total of 36 participants have been benefited from this online learning tool.

Valley Fever syllabus for Primary Care Physicians.

A Valley Fever syllabus booklet was prepared for Primary Care Physicians by the VFCE to enhance learning. It describes in detail the overview of disease, reasons for considering Valley Fever diagnosis, the role of Primary Care Physicians, and diagnostic modalities available for the disease. The syllabus is published as a booklet and the electronic version is also available on the VFCE website for the convenience of the readers.

Telemedicine Education Program.

The VFCE has recently started this service in collaboration with the Arizona Telemedicine Program at the College of Medicine at the University of Arizona. This program consists of a series of lectures focusing on Valley Fever - early diagnosis and treatment that are being provided to the target audience via use of teleconferencing technology. The target audiences for these sessions are: i) The healthcare providers who serve the Native American population through the Indian Health Services (IHS); ii) The Rural Healthcare centers across Arizona, separated from any urban centers by vast geographic distances.



Community Educational Programs

Annual Valley Fever “Ask the Doctor Your Questions” event.

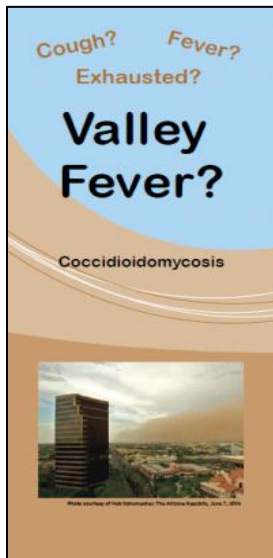


The community event “Ask the Doctor Your Questions” have been held annually since 2008 as part of the Valley Fever

Awareness Week. These events involve a series of lecture by Valley Fever experts from different areas of Research and Clinical practice. The talks are followed by an open discussion and question and answer session between speakers and the general audience, where the speakers address issues faced by the community.

The Public Awareness campaign.

The Walk for Valley Fever is an annual awareness campaign promoted and conducted by Valley Fever advocacy groups like the “Valley Fever Alliance” in both Maricopa and Pima counties. The purpose is to increase awareness among community members. In addition, media campaigns like radio and television interviews and community lectures are also hosted by the center to push forward the cause and arouse awareness among Arizonans.



Educational Handouts. The VFCE, in collaboration with the state health authorities (ADHS) has prepared posters, brochures and leaflets for public education. These are provided to the public through community events and also available on the Valley Fever website www.vfce.arizona.edu.



Figure 4. Poster and a brochure for public education



Creating a Physician Network Alliance

The Valley Fever Alliance of Arizona Clinicians (VFAAC) was founded in 2009. It is a voluntary organization of local physicians within Arizona. It was created to identify clinicians with appropriate experience and interest in Valley Fever from across the state, to provide assistance to patients or their physicians seeking medical help with illnesses, either diagnosed or suspected to be Valley Fever. As of June, 2011 the VFAAC comprised 93 members, with physicians spanning across all specialties from the Phoenix – Tucson corridor.

The VFAAC is governed by a nine-member Board, five from Maricopa County and four from Pima County. New members joining the VFAAC have to be approved by the Board for a complete membership. The Board meets every quarter to discuss the program progress and the meeting minutes are recorded for each meeting. The minute reports are later used by the center for internal evaluation.

| Table 2. Distribution of Medical Specialties within VFAAC. | | |
|---|---|---------------------|
| Category | Includes | Total (N=93) |
| Primary Care Physicians | Family Medicine, Internal Medicine, Pediatrics | 13 |
| ID/Pulmonary | Infectious Disease, Pulmonology | 53 |
| Others | All other medical specialties (Surgeons, Orthopedics, etc.) | 27 |

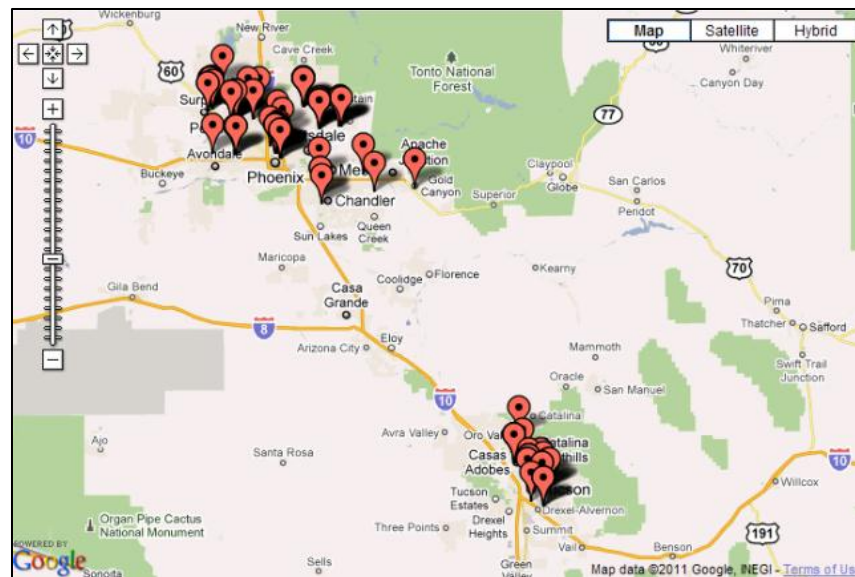


Figure 5: Snapshot of VFAAC membership locations



Providing Patient Assistance for Better Diagnosis and Care

Find a Doctor.

This service was started as a part of the Valley Fever Corridor Project to help Valley Fever patients find physicians in their close vicinity who can help them treat their infections and reduce the physical distance between the physician and patient. The patient can generate a request by completing a form available on the VFCE website www.vfce.arizona.edu. VFCE staff process the request, matching the needs of the patient by physician specialty and close office location to select from. The VFCE acts as a moderator in the process thus assisting patients with finding appropriate clinical care. The VFCE does not provide direct clinical care to the program

participants. This service was started in fall of 2010 and is available to all the Arizona residents free of charge. More data and the patient feedback on this service are provided in the appendix attached to this report.

The Website.

The Valley Fever Center for Excellence created an updated website at www.vfce.arizona.edu to fulfill the needs for its clients and to expand the outreach of the Valley Fever Corridor Project. Several new features were added to attract viewership that will enhance public awareness and support for the Project.

Summary.

Since its inception in 2009 the Valley Fever Corridor Project has progressed towards fulfilling its objectives. The VFCE is successful in providing CME training to approximately 200 physicians at alternate sites within the endemic corridor. These CME sessions have been reviewed and rated highly by participants. Due to the success achieved by our CME programs in Arizona, the New Mexico Department of Health Services invited our speakers in the spring of 2010 to deliver a CME seminar in their state; this has further motivated us and strengthened our commitments. The new website is enabling regular updates of current information and activities. The VFAAC membership has grown to 93 member physicians within a year of its creation and the VFCE is getting regular patient requests for physician referrals from across the state. We are trying to address these requests in a relatively short period of time and this service has been successful in cutting down the geographical distance between patient and physician. The patients making requests have rated our services as satisfactory. To view details of our survey and evaluation of VFAAC activities see the appendix.

Conclusion.

The Valley Fever Corridor Project is a novel approach towards addressing the Valley Fever issue in Arizona. The multipronged approach adopted for this program will help to achieve its objectives in the future. The program is still in its infancy and its exact outcomes are yet to be seen, however the process of dissemination of medical knowledge through CME's, enhanced communication among physicians and spreading awareness within the local community through education are strong elements driving this project. We hope our commitment to our goals and working in close alliance with our partners- State and County Health Departments, Advocacy groups, Funding partners and the VFAAC members will further support and ensure our success. Lastly, we hope that the support provided by fellow Arizonans will help further and support us to carry on our commitments in future.



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APPENDIX I

Analysis of VFAAC Activities

For the period October – June 2011, a total of 95 patient requests were received by the Center. Figure 1 and Table 1 depict the frequency of requests by origin. Most of the requests were received from Maricopa, Pima and Pinal counties. However, few were also received from Mohave and Santa Cruz counties in Arizona and as far as California, New Mexico, New Hampshire, Colorado and Texas. These latter requests were aggregated in the “Out of State” category. We were unable to provide service to the requests coming from regions outside the State of Arizona.

Figure 1: Patient Requests by Counties:

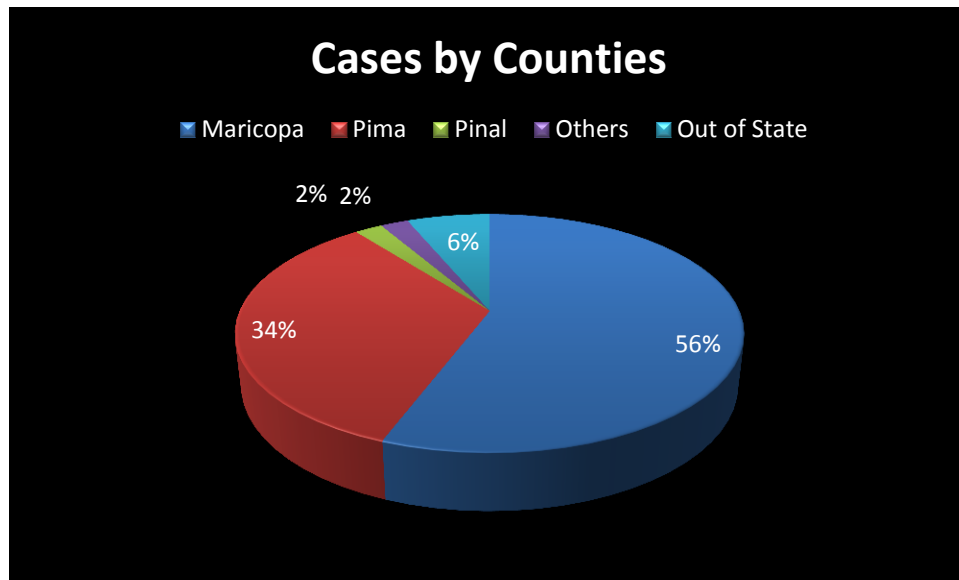


Table 1. Distribution of patient requests by counties.

| County | Number of requests received |
|--------------|-----------------------------|
| Maricopa | 53 |
| Pima | 32 |
| Pinal | 2 |
| Others | 2 |
| Out of State | 6 |
| Total | 95 |



Demographics of the requests

The following figures and tables summarize the demographics of all the requests received by the VFCE during Oct 2010 - June 2011. As can be seen in the graph below, female was the predominant gender using this service.

Figure 2: Demographics of patients making the requests (by age & gender)

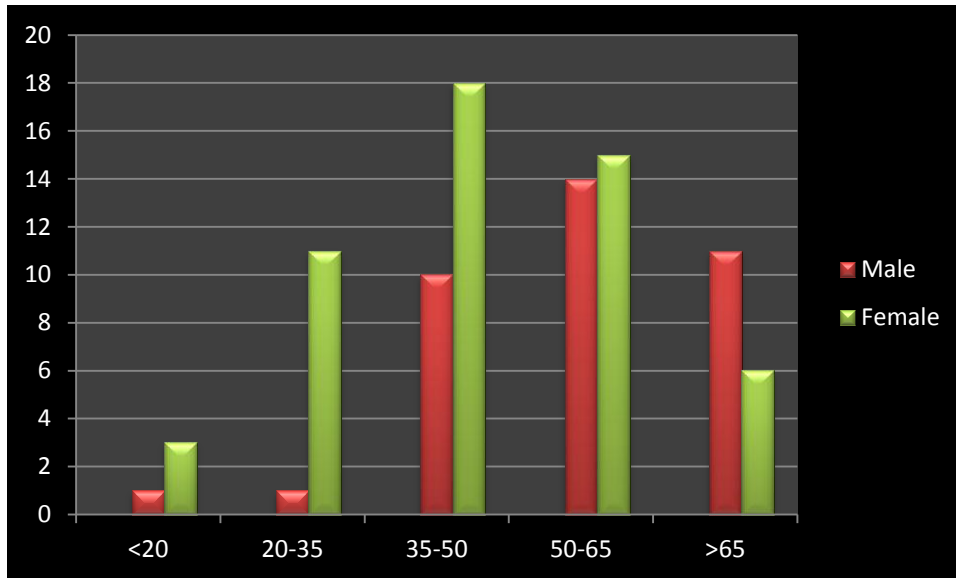
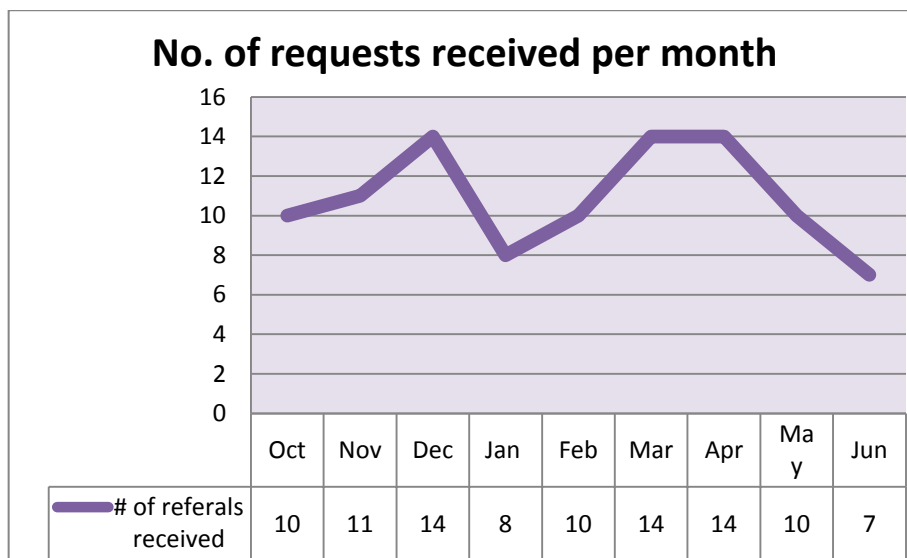


Figure 3. Number of requests received per month (Oct 2010 – June 2011)



Procedure for Requests

Each patient requesting assistance was provided with the names of three physicians in close proximity to their residence. Several factors were assessed in order to process these requests (Table 2).

Table 2.

Considerations for Identifying Physicians

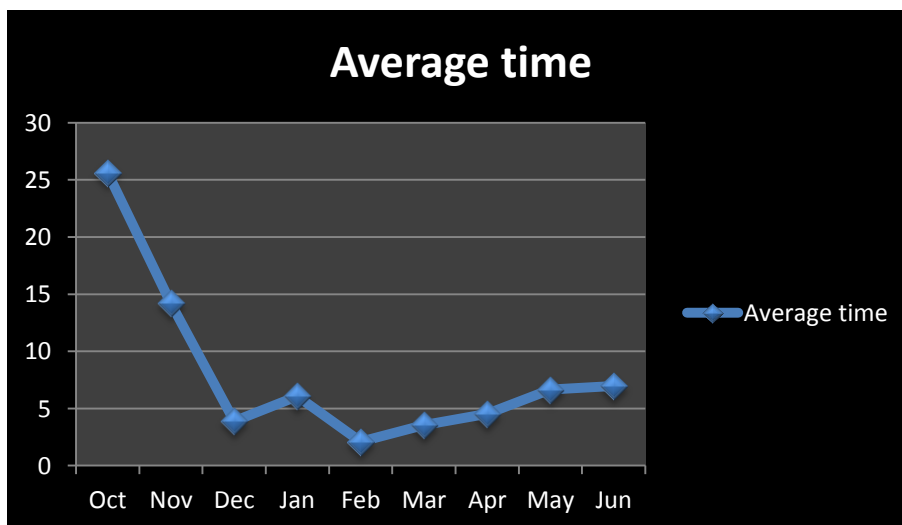
Geographic Proximity
 Accepts patient's health insurance
 Availability of dates for appointment

Geographic Proximity: The geographical closeness was calculated using Google Earth software. The patient's address was used as a reference point and the software generates a list of all VFAAC members close to that reference point. The software also calculated the straight line distances between the reference point and each physician location. This helped us identify a clinician in close proximity to the patient. As a result, the patients were either referred to a Primary Care Physician or Specialist. This information was sent to the patient by email, phone or mail depending on their preferences.

In case of incomplete patient request forms, we contacted the patient for more information. However, not all patients responded to our request for additional information. As a result, 19% (18 of 95) of requests were not completed. These requests were then considered processed even if patients did not respond.

The time taken by the Center to process the request was also calculated. For calculation purposes we only considered work days (Monday-Friday). For cases where additional information was necessary but not received, process time was calculated by logging the time the original request was received and when contact was initiated by the Center.

Figure 4: Monthly report of average time taken (in hours) by the center for request processing



As can be seen by Figure 4, process time was longer at the beginning of the project and has gradually improved. Several factors contributed to the increased process time in October 2010 (See Table 3).

Table 3.

Factors contributing to longer process time

1. The requests were not adjusted for weekend time.
2. Less familiarity with the procedure (as it was just being developed in real time).
3. Geographical proximity initially calculated manually using zip code maps.
4. Time schedule of coordinator.

Geographical distance between requestor and the provider: We provided each patient with a list of three doctors in decreasing order of their distance from the patient. Table 4 provides the aggregate average of the distance for all three clinicians identified for patients (n=95).

Table 4.

| Locations for all patients | Average Distance in miles |
|----------------------------------|---------------------------|
| 1 st closest location | 14.50 |
| 2 nd closest location | 33.77 |
| 3 rd closest location | 42.23 |

Referrals made for patient requests: Out of the 95 patients, approximately one third of the patients were referred to Primary Care Physicians. Table 5 lists the count for each type of provider.

Table 5.

| Referral needed for | Count (n=89) |
|-----------------------------------|--------------|
| Primary Care Physicians | 33 (35%) |
| Infectious Ds./Pulmonary | 44 (46%) |
| Others | 0 |
| Did not send complete information | 18 (19%) |
| Total | 95 |



APPENDIX II

Evaluation of our services

The Valley Fever Center started the patient assistance service called “*Find a doctor*” and used its website to host the program. This service was started in October, 2010 and has received 95 patient requests through June, 2011. An online survey was conducted to get feedback from participants on their experience. It was sent to a total of 41 patients and 18 have responded to date. We would like to share with you the feedback received from our clients.

- I. Response Rate: 44%
- II. Most (~83%) said that they learned about our service through internet search.
- III. Reason for referral: The three most common reasons provided (descending order):
 - a. Dissatisfied with current doctor.
 - b. Had VF in past and wanted a current evaluation.
 - c. New to Arizona.
- IV. Made an appointment with recommended providers: 61% (11/18) said that they made an appointment with one of the physicians recommended by the Valley Fever Center and 72% (8/11) of those making an appointment chose the geographically closest option available.
- V. Most common reason for choosing this physician: The common reasons provided were (descending order):
 - a. Physical distance.
 - b. Medical specialty of the physician.
 - c. Earliest appointment availability.
- VI. 80% of respondents gave the highest rating to the accuracy, helpfulness and timeliness of the information provided to them.
- VII. When asked for reasons that prevented an appointment from being made, the most common reasons provided were (descending order):
 - a. The center took too long to provide information.
 - b. Wished that the Valley Fever Center gave them more names of physicians to choose from.
 - c. The physician’s office did not accept their health insurance plan.
- VIII. All respondents said that they would definitely like to recommend this service to a friend or others looking for a provider for their Valley Fever.

