

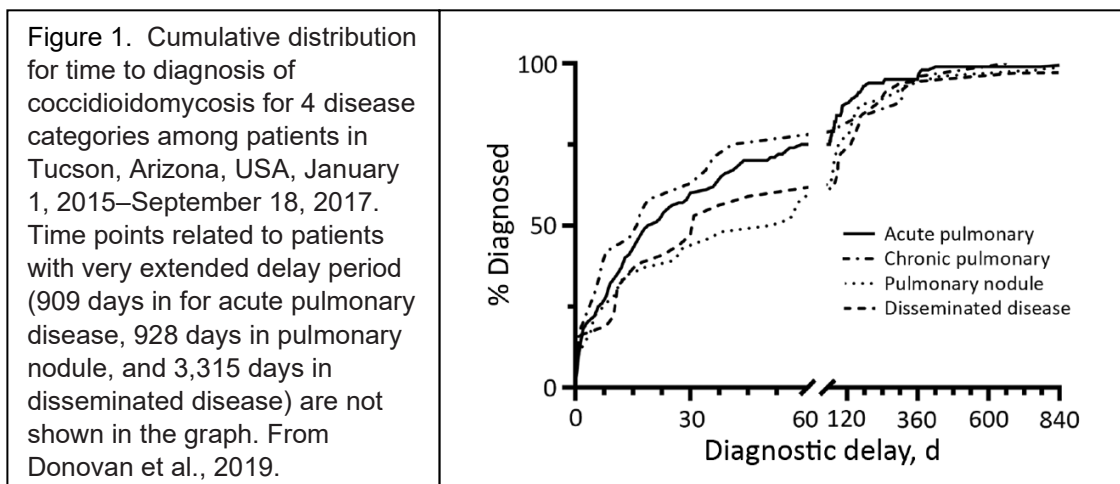
September, 2023

Welcome to the Valley Fever Center for Excellence's website. Here we try to provide reliable and timely information about coccidioidomycosis, the medical name for Valley fever.

The University of Arizona's medical practice merged with Banner Health's in early 2015. Among the many opportunities that this alliance created was the possibility for academic strengths of the College of Medicine-Tucson to be more effectively put into practice through the large number of patients that Banner Health serves. Research teams at the Valley Fever Center for Excellence (VFCE) are actively pursuing new ways to diagnose this disease and prevent it with vaccines. They are also trying to understand how most peoples' immune systems so effectively control their infections while those of others do not. However, even without new discoveries, the VFCE has long recognized that care of Valley fever patients could be improved greatly by raising the standards for prompt diagnosis and applying best practices in management.

Within Banner, the Clinical Consensus Group (CCG) program has existed for several years. The CCG's purpose is to define and implement best practices for a variety of medical conditions. At the time of the merger with UArizona, there had not yet been a focus on Valley fever. In June 2017, I initiated the development of a clinical practice for the "Identification, Evaluation, and Management of Coccidioidomycosis in Adult Outpatients" through the CCG program. A year later, this was endorsed by seven stakeholder CCGs as well as leadership teams throughout Banner. A rollout was conducted online September 18, 2018. That presentation and the Banner implementation materials are located in the [Clinical Practice Toolbox](#) on the VFCE's website, so that these resources are available to all, even outside of the Banner network.

Prior to the development of the ambulatory clinical practice, two retrospective reviews had been published by VFCE investigators about the current state of ambulatory practices at [Banner University Medical Center in Tucson](#) and [Banner University Medical Center in Phoenix](#) and the opportunities for improvement that those studies revealed (**Figure 1**).



Once the clinical practice became available, we began to assess its implementation with the excellent assistance of Banner Data Analytics staff. In 2021, this resulted in [a third](#)

[publication](#) which, among other things, identified a strikingly low proportion of Banner cocci diagnoses coming from urgent care clinics (**Table 1**).

| Location                | Year of Diagnosis |             |                   | Total        |
|-------------------------|-------------------|-------------|-------------------|--------------|
|                         | 2017              | 2018        | 2019 <sup>a</sup> |              |
| Hospital inpatient ward | 384 (71.9%)       | 472 (74.0%) | 634 (72.8%)       | 1490 (72.9%) |
| Primary care clinic     | 90 (16.9%)        | 86 (13.5%)  | 101 (11.6%)       | 277 (13.6%)  |
| Specialty clinic        | 29 (5.4%)         | 48 (7.5%)   | 89 (10.2%)        | 166 (8.1%)   |
| Emergency care unit     | 15 (2.8%)         | 18 (2.8%)   | 32 (3.7%)         | 65 (3.2%)    |
| Urgent care unit        | 7 (1.3%)          | 2 (0.3%)    | 1 (0.1%)          | 10 (0.5%)    |
| Unknown                 | 9 (1.7%)          | 12 (1.9%)   | 14 (1.6%)         | 35 (1.7%)    |
| Arizona Banner total    | 534 (100%)        | 638 (100%)  | 871 (100%)        | 2043 (100%)  |
| Total Arizona cases     | 6885              | 7478        | 10 771            | 24 134       |

<sup>a</sup>Arizona case totals provided by the Arizona Department of Health Services. The 2019 Arizona total is provisional.

**Table 1. New coccidioidal diagnoses within Arizona Banner Health and Arizona state totals, 2017–2019. From Pu et al, 2021.**

For that reason, in 2020, I worked with the Urgent Care CCG to implement educational activities to increase appropriate testing for cocci. This led to [a fourth publication](#) earlier this year which demonstrated some improvement but also that there still was a way to go (**Table 2**).

| Groups                                                                       | Year                |                     |                     |                     |
|------------------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|
|                                                                              | 2018                | 2019                | 2020                | 2021                |
| All BUCS patients with pneumonia (J18.1, J18.9) <sup>a</sup>                 | 2094                | 2565                | 3473                | 3558                |
| Number of pneumonia patients (% of total) tested for CM <sup>b</sup>         | 150 (7.2%)          | 202 (7.9%)          | 732 (21.1%)         | 781 (22.0%)         |
| 1st visit number tested (%positive) <sup>c</sup>                             | 21 (29%)            | 45 (29%)            | 478 (20%)           | 543 (13%)           |
| 2nd visit number tested (%positive)                                          | 129 (14%)           | 157 (18%)           | 254 (31%)           | 238 (16%)           |
| Both visits number tested (%positive)                                        | 2 (100%)            | 3 (0%)              | 39 (41%)            | 45 (62%)            |
| Percentage of tested patients with positive tests (95% confidence intervals) | 17.3% (10.8%–25.2%) | 20.8% (14.6%–27.8%) | 26.0% (20.3%–29.7%) | 17.5% (14.5%–20.7%) |

Abbreviations: BUCS, Banner Urgent Care Services; CM, coccidioidomycosis.

**Table 2. Changes in testing patterns for coccidioidomycosis in Banner Urgent Care Service Patients with pneumonia from the years 2018 through 2021. From Pu et al, 2023.**

As an extension of our most recent work, this year we have been developing a dashboard, to provide nearly real time information about how well Banner clinicians are doing in diagnosing Valley fever in their patients. The dashboard is focusing first on urgent care patients, but over time modified versions will be made available to Banner emergency departments, primary care clinics, and inpatient services. Though originally envisioned to improve implementation of the Valley fever clinical practice by providing feedback to clinicians about their performance, the dashboard has also provided a window into how much Valley fever is or is not in the community. Just as how Public Health identifies the start and end of influenza seasons, our new dashboard is now providing information about when Valley fever is infrequently diagnosed and when seasons with high rates of Valley fever diagnoses are upon us. For example, in late July this year, the evidence was clear that we were entering a time when patients with pneumonia were increasingly, nearly 20%, due to Valley fever. We thought it was important to share this information with the community, and UArizona Health Sciences and Banner Health jointly made [this information](#) known to the press on July 27. Since then, the increased Valley fever in the community as a proportion of community acquired pneumonia has increased, confirming our initial impression (**Figure 2**).

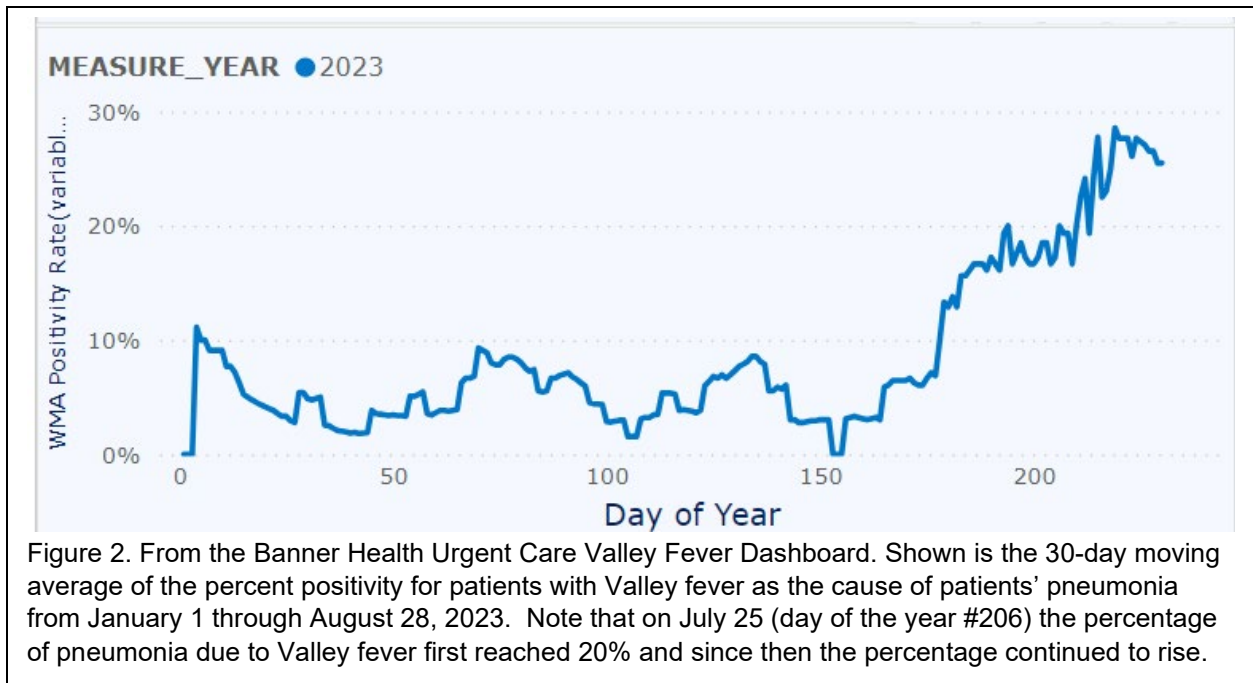


Figure 2. From the Banner Health Urgent Care Valley Fever Dashboard. Shown is the 30-day moving average of the percent positivity for patients with Valley fever as the cause of patients' pneumonia from January 1 through August 28, 2023. Note that on July 25 (day of the year #206) the percentage of pneumonia due to Valley fever first reached 20% and since then the percentage continued to rise.

Since the information on the dashboard will be updated weekly, the VFCE website will provide these running statistics on an ongoing basis. Look for this to begin sometime later this fall.

Improving patient care nationally is one of the central objectives of the VFCE as described in its charter. However, first we must do the best that we can here in Arizona. The VFCE looks forward to continuing its work with Banner for its patients. This is just one of the benefits of the University of Arizona's College of Medicine—Tucson having the Valley Fever Center for Excellence's sole purpose to manage this disease in increasingly more effective ways. Support of our work through the [University of Arizona Foundation](#) is always welcome.