

VALLEY FEVER



RAGofAZ tests all incoming rescues for Valley Fever---about 30% of incoming dogs test positive---here's what you need to know about the disease and your dog!

Valley Fever (VF), or Coccidioidomycosis, is reaching epidemic proportions in Arizona, affecting both people and dogs. Dogs, in fact, are even more susceptible than humans, by virtue of their closer proximity to the ground where Valley Fever spores live. VF is a fungal infection contracted by inhaling soil-dwelling spores. When soils containing the fungus are disturbed and dust is raised, spores may be inhaled with the dust. Soil is disturbed by things like construction, digging (by dogs or humans), and wind, especially the haboobs that occur in the desert. Dogs, known to dig and to stick their noses right into the dirt, have potential to breathe in many, many spores at a time. The microscopically small spores are found in the arid soils of the low desert regions of the southwestern U.S. In recent years, we've seen explosive population growth in Arizona and an associated increase in new home construction and extreme disturbance of the soil. The increase in the number of cases of VF seems to closely correspond to the increase in population. VF infections are more likely to occur during certain seasons. In Arizona, the highest prevalence of infections occurs June through July and from October through November.

Many dogs in this part of the country become infected with VF, but do not become visibly ill. In most cases, only a mild respiratory inflammation occurs as the dogs' defense mechanisms wall off the organisms. However, very young puppies, older dogs, or dogs with weakened immune systems are at much higher risk to develop a more serious case of VF. In severe cases, the disease can spread throughout the lungs and invade other organs with the fungal infection. Once the spore has been breathed into the lungs, the spore transforms itself into a larger, multi-cellular structure called a spherule. The spherule grows and will eventually burst, releasing lots of small endospores. These develop into new spherules, and the cycle repeats again and again. This is how the fungus can be spread from the lungs through the bloodstream to other organs.

VF is classified as either Primary or Disseminated disease. Primary disease, or the initial infection, is limited to the lungs and may go away on its own, or the dog may become sick enough to require medication. Early symptoms often seen in the initial stages of Valley Fever are dry, harsh cough, fever (anything over 102 is considered a fever), depression, and lack of appetite. Symptoms typically occur about 3 weeks after infection. In dogs, VF commonly spreads to other parts of the body. When this happens, the dog has what is referred to as disseminated disease, which means that there are fungus cocci throughout the body. These dogs will almost certainly die without treatment. In disseminated disease in dogs, the bones and joints are the most frequent targets and lameness is the most common symptom. Other symptoms of disseminated disease include lack of appetite, lethargy, persistent fever, and weight loss. Occasionally, the fungal infection may reach the brain, and seizures can result.

The diagnosis of Canine Valley Fever is made by the history you give your vet, the symptoms the dog is having, and results of blood tests which measure the levels of VF antibodies produced by the dog's

immune system. Other diagnostic testing may be required, including but not limited to other blood tests, x-rays of the chest and/or any painful or swollen bones or joints, repeat antibody testing, etc.

Titers—titers are not always an adequate meter of how sick the dog is. However a dog with a titer of 1:64 and greater is always sick and can be very sick. A titer of 1:16 and 1:32 is usually sick. Titers of 1:2, 1:4 and 1:8 are considered a weak positive. If they have a low titer and are acting sick other diagnostic tools are needed (blood work, x-rays, biopsy, culture, ultrasound, CT). There can be discrepancies between labs when doing valley fever tests. Ideally the lab work should be done using the same lab for evaluation whenever possible. When the titer is consistently going up, have both the titer and complete blood count performed.

Diagnostics—definitive tests are cytology, biopsy, and culture. More advanced tests are CT and MRI for the central nervous system; ultrasound to evaluate abdomen or collect guided samples from lungs or abdominal organs.

Valley Fever lasts typically 6 to 12 months with the respiratory version; 12 to 18 months if the disease is disseminated to the bone. It could last anywhere from a few weeks to a lifetime.

Treatment of Valley Fever Valley Fever is NOT contagious—to either other dogs or human. In most cases, dogs that develop symptomatic VF will require treatment with an anti-fungal medication. **Current treatment only curbs the growth of the fungus it does not treat the disease.** It's a lengthy protocol depending on the severity of the infection, but usually lasts 6-12 months, and sometimes longer. Dogs with infection that's invaded the brain or spine may require medication for life to keep symptoms from returning. Anti-fungal medications can be very expensive, but are the only way to treat the cause of this disease. The most effective drug to date for valley fever is fluconazole (Diflucan). Fluconazole is a generic drug and is now very affordable in a compounded form. However, the generic form is preferred if affordable for you. Fluconazole has the fewest side effects and can be given on an empty stomach. This is a benefit of the drug since some dogs have a poor appetite with valley fever.

Coat changes in dogs with valley fever can be remedied with fish oil. It is the drug of choice for the treatment of valley fever in the eyes, spine and brain. Uncommon idiosyncratic reactions include severe liver changes, excessive drinking/urination and allergy/hives.

Itraconazole (Sporonox) has more adverse effects. It is dose dependent as lower dosage results in fewer side effects. It is more likely to raise liver enzymes and can cause skin lesions. It is also more expensive and is most cheaply obtained from Canadian pharmacies. It is less absorbable and pills are only available in 100 mg capsules. It often works when fluconazole does not. At this point using compounded itraconazole is NOT recommended.

Ketoconazole is used less frequently. There are adverse effects especially absorption issues that can be helped with Vitamin C.

Amphotericin B is reserved for severely ill animals. It must be given in multiple doses by IV in the hospital. There is a risk of damage to kidney. The Lipid complex forms of Abelcet and Ambisone protect kidneys but are more expensive.

Supportive Care In severe cases of valley fever, hospitalization, oxygen and fluids may be necessary in the short term. Oxygen support may be required for those in severe respiratory distress.

NSAIDS—Drugs such as Rimadyl, Derramax, Previcox and Metacam may be helpful with pain and fever reduction up to 24 hours (especially with Previcox and Metacam). They reduce bone pain and may result in a reduction in coughing. Tramadol may also be used for pain

Steroids should be used judiciously. Likely recommendation would be for brain and spinal cord swelling (seizures/paralysis). Steroids may result in rapid reduction in airway swelling. A short burst of oral

treatment with rapid weaning to lower doses would be most effective. Dr. Shubitz does not recommend injectable steroids. Steroids can suppress the immune system—they are too potent at high doses or long term use.

Cough suppressants—typically hydrocodone. These can result in significant improve in comfort to the dog as it allows the airways to heal and reduces anxiety of both the dog and the family. There are over the counter cough suppressants but they should be used only with the instruction of a vet as to dosage. Some decongestants are ok but check with the vet as they can be lethal.

Nutrition--Food should be good high quality calories. Typically dogs with valley fever should be fed one and a half times the normal amount of food. Many dogs with valley fever lose their appetite. Use any means possible to get them to eat—meat, yogurt, pasta, potatoes, baby food, peanut butter, liver sausage, canned Innova Evo.

Supplements—a good quality pet vitamin should be part of this dog's regimen. Desert Defense is another good option to help boost immunity. Extra B50 complex has been successful in helping to stimulate the appetite. Also recommended is Denamarin which contains liver anti-oxidants (get from vet or on line). There are holistic additions such as milk thistle and SAM E which are also liver anti-oxidants.

Rest—do not let the dog do any heavy exercise especially if the dog has a cough. Dog should be outside (especially in the heat) only to eliminate or for short walks. For dogs with lesions, they should have adequate rest of the bones with lesions.

Aftercare After treatment for valley fever, something other than the titer should be monitored. Each animal should be treated on a case by case basis. Some cases will recur as 30 to 50 % of cases recur. This is likely due to the fact that some dogs do not have the right immunology to keep dogs clear of disease. The drugs do not clear up the disease, but merely treat the symptoms.

After stopping the drug protocol, families of dogs with valley fever should observe the following testing : two months after stopping the drugs, check titer and complete blood count(CBC); 4 months after, check titer and CBC; 6 months after, check titer and maybe CBC; thereafter, check titer ever y 6 to 12 months.

A team at the University of Arizona is working on a Valley Fever vaccine. For more information on how to support the U of A team developing this vaccine, please go to <http://www.vfce.arizona.edu/> for more information.