

Brucellosis

Prevention Is Still The Best Medicine

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On March 11, 2015, Zoetis Animal Health in partnership with the AKC Canine Health Foundation provided a free webinar on Brucellosis. The seminar was conducted by Dr. Margaret Casal, associate professor of small animal genetics, reproduction and pediatrics at the University of Pennsylvania. With her background at the University of Zürich in Switzerland and knowledge from her ongoing research, Dr. Casal brought her unique experience and international perspective to the discussion on this worldwide disease. The following information is inspired by Dr. Casal's presentation.

What is canine brucellosis?

Brucellosis is an infectious disease caused by the *Brucella canis* (*B. canis*) bacteria. Other *Brucella* species can cause disease in dogs, but *B. canis* is the most common species found in dogs and wild canids, such as wolves and coyotes.

How is brucellosis transmitted?

As a sexually transmitted disease, brucellosis is recognized as a significant cause of reproductive failure in kennels. Either sex can be affected. AI does not avoid the risk, because the bacteria can spread through semen, including fresh chilled and frozen semen. However, brucellosis can also be transmitted from one dog to the next simply by *typical dog behavior*: by sniffing and licking secretions, discharges, urine, feces, saliva and aborted fetuses from an infected dog, or by a puppy suckling milk from an infected dam. The bacteria can be transmitted by inhalation of infested dust and dirt, and it can survive for long periods of time in warm humid temperatures, water, aborted fetuses, equipment, and clothing.

What are the signs of brucellosis?

Some dogs affected with *B. canis* may be normal on exam. However, pregnant bitches infected with *B. canis* often abort dead puppies between 45-60 days of gestation. After abortion, the bitch will have copious vaginal discharge for over 6 weeks, which is a classic sign and is an important source of infection to other dogs in the kennel. Some pregnancies survive to term, only to produce stillborn puppies. Any puppies that are born alive are weak, surviving only a few hours or days. Bitches that have apparently "missed" or failed to conceive may in fact have lost their litters very early due to infection.

Males infected with *B. canis* may have irregular, testicular enlargement, scrotal swelling and dermatitis, and markedly decreased fertility. By 8 weeks post infection, more than 90% of sperm are abnormal on examination. Chronically infected males may have atrophied testicles and complete loss of libido. Over time, dogs grow lethargic with enlarged spleens, swollen lymph nodes, weight loss, pronounced ocular infection, and joint and back pain. Brucellosis is not considered a fatal disease, but the debilitating side effects can be severe.

Can people get infected with brucellosis?

Yes, brucellosis is a zoonotic disease, meaning humans can and do become infected. Some *Brucella* species are a significant source of debilitating disease in people worldwide, with an estimated 500,000 cases annually. The disease is acquired through ingestion of unpasteurized milk or raw cheese products, undercooked meat, or contact with genital organs or blood. *Brucella* is easily aerosolized, so inhalation of microscopic

droplets is also a common route of infection. People infected with brucellosis typically experience a recurrent fever, with headache, weakness, muscle and joint pain, fatigue, weight loss, GI disease and liver dysfunction, foul smelling perspiration, or a potentially fatal cardiovascular involvement. While cases of *B. canis* in people are not common in the U.S., they do occur particularly among veterinarians or staff, kennel workers, breeders, farmers or laboratory workers. Anyone coming in close contact with an infected dog or puppy can contract the disease. Dr. Casal cited a case of a little girl in New York City who contracted the disease from her new puppy. Consider the typical face licking behavior of an excited puppy with a child, and the picture becomes clear.

Is there an effective way to treat brucellosis?

Brucellosis is not a fatal disease, but treatment is challenging, expensive, and not entirely effective. The bacteria are good at hiding from the immune system and antibiotics. It is possible to treat a dog infected with brucellosis for many weeks, only to have the dog test positive again after several months or even years. All affected dogs in the kennel must be isolated, neutered or spayed, and eliminated from the breeding program. In many cases, it is recommended that these dogs be euthanized. The kennel must be quarantined for at least 3 months with no visitors, and no dogs leaving from or arriving to the population. A kennel is not considered clear of the disease until all the other animals test negative for 3 consecutive months. The environment must be disinfected, and all kennel owners and workers must wear protective clothing to guard against spread.

How do we test for brucellosis?

Today there are several tests available, but the two tests to remember are the Rapid Slide Agglutination Test (RAST) for screening and the Agar Gel Immunodiffusion Test (AGID) to confirm the diagnosis. Most veterinarians will use the RAST test to screen as the first step. This test is affordable and sensitive, but false positives can happen because this test may react to other bacteria present. In other words, a negative is a negative, but if there is a positive result, the AGID test is done to confirm the diagnosis or rule out *B. canis*.

How can we avoid brucellosis?

There is no vaccine for this disease. Furthermore, the incidence of *B. canis* in dogs is on the rise in the US. Increasingly, dogs are moved across state lines and internationally. Dogs in the US are no longer entirely safe from diseases that, in the past, have been relatively rare but are now unknowingly being imported. The best and only way to protect dogs is to prevent exposure in the first place. According to Dr. Casal, the most important steps we can take are:

1. **TEST** all breeding animals 3-4 weeks before breeding.
2. **TEST** any stud dog 2-4 times per year, depending on how often he is used.
3. **TEST** all imports and exports.
4. **TEST** any new acquisitions to the kennel and keep them quarantined until you have 2 negative tests, 4-6 weeks apart.
5. **TEST** all dogs rescued from puppy mills. Rescue organizations take note!
6. **TEST** all stud dogs collected for chilled or frozen semen shipments.
7. **TEST** any sickly pet puppy known to be from a puppy mill.

The cost of testing is minimal compared to the expense of a brucellosis outbreak. The loss of litters, the heartbreaking loss of brood bitches and stud dogs, and their economic potential to your breeding program, and the loss of your reputation are a terribly high price to pay for not testing. Take it seriously.