

Canine Brucellosis

Protect your dog from this harmful STD.

D. Caroline Coile, Ph.D.

It was a formality, really – the brucellosis test the stud-dog contract required for breeding. Then the test came back positive. That's when the world started spinning.

What is brucellosis? Canine brucellosis is the best known sexually transmitted disease in dogs. It's caused by the bacteria *Brucella canis* (*B. canis*), although in rare cases, other *Brucella* species, particularly those from wild hogs, have infected dogs.

What does it do? *B. canis* settles in the reproductive organs of both males and females, flourishing in tissues dependent on testosterone, estrogen or progesterone. It renders males infertile, with large, abnormal sperm in the first three months after infection, followed by a lack of sperm with long-term infection. It causes abortion around 40 to 55 days of gestation in about 75 percent of bitches, with others appearing to fail to conceive because of early abortion or resorption (when fetuses are absorbed, leaving no sign of pregnancy). *B. canis* can also infect and cause problems in the eyes, vertebrae and kidneys.

Is it only transmitted through sexual intercourse? Besides mating, *B. canis* is spread through exposure to vaginal discharge or aborted material from infected bitches, and from urine containing semen or prostatic fluid from infected dogs. Dogs housed with infected dogs will usually become infected within six months.

Isn't it too rare to worry about? Around 20 to 30 percent of dogs screened in Central and South America, and about 8 percent of stray dogs in the southern United States, test positive for brucellosis. However, it's found all over North America. A 2008 outbreak in two high-volume Michigan kennels that supplied puppies to pet stores in several states brought brucellosis back into focus. Some unconfirmed reports speculate the relocation of dogs affected by Hurricane Katrina, and the distribution of shelter dogs and imports from Mexico throughout the United States may have also spread the disease.

How can I prevent it? Unfortunately, no vaccination is available, partly because the immunological response would cause blood tests to look as though dogs that received the vaccination were instead infected with brucellosis. But there are ways to prevent it:

Don't allow your dog to sniff and lick at the urine or vaginal discharges of strange dogs.

Test both dog and bitch at least three weeks before any proposed mating, even if it's their first time. Dogs can catch brucellosis from means other than sexual intercourse. The three-week periods allow you time to retest should a positive result come in.

Before bringing a new dog into your home, particularly a stray or a dog from a kennel or shelter situation, test it for brucellosis.

Is testing expensive? Screening with a simple blood test ranges from about \$15 to \$80. Several types of blood tests are available, the most popular being a rapid slide agglutination test (RSAT – usually run in-house at the veterinary clinic) and the tube agglutination test (TAT – usually run at a testing laboratory).

The type of test won't be important unless your dog tests positive. Then it is very important because although these common tests are sensitive, they are not extremely specific; they tend to react to a lot of other bacteria that aren't *B. canis*. In fact, about 40 percent of dogs the RSAT identifies as infected are not ("Canine Brucellosis Caused by *Brucella Canis*" by S. Shin and L.E. Carmichael, *Recent Advances in Canine Infectious Diseases*, 1999).

If the test came back negative... Your dog is almost certainly clear. The exception is if the dog was infected in the last 8 to 12 weeks.

If the test came back positive... Some veterinarians may advise euthanasia at this point, but don't do it. Additional testing must be done. Repeating the same test, or even another type of agglutination test, will yield the same result. Thus, if your dog tests positive with an in-house RSAT, sending it off to a lab for a TAT is useless.

What other tests are there? The agglutination tests are good screening tools, but if one comes back positive, ask your

veterinarian to arrange for an agarose gel immuno-diffusion (AGID) test from the New York State Diagnostic Laboratory at Cornell University. The AGID test identifies Brucella organisms extremely accurately, but it takes about a week to run. Blood cultures take even longer, but are highly accurate and the best test in the first two months of infection. More recently, a polymerase chain reaction (PCR) test appears to be 100 percent accurate for *B. canis*, but it is not widely available.

The bitch is ready to be bred, and the agglutination test came back positive. This is why you shouldn't wait until the last minute to test because you cannot ethically breed a suspected stud, naturally or artificially, at this point. If the bitch is suspect, you could breed her artificially, with no contact with other dogs while awaiting the results, understanding that there is a possibility of abortion if she is infected.

What about frozen semen? Frozen and chilled semen can apparently still transmit *B. canis*, and are not the answers to maintaining an affected dog's reproductive ability, unless the dog was tested clear when the semen was collected.

Can it be treated? If the AGID test and culture come back positive, your dog is infected. If caught early (within three months of infection), antibiotic treatment may effect a cure. Cure rates are lower in longstanding cases. Even if cured, males may never be fertile because of teste damage. Even if fertile, there is some thought they may remain carriers.

Dogs should be monitored for six months after they appear to be cured. Because of the costs, low probability of success and high probability of infecting entire kennels, isolation and euthanasia is the standard advice for affected dogs in large breeding operations.

The last choice of treatment for beloved pets is euthanasia. If attempting treatment, start as soon as possible.

Treatment includes a combination of antibiotics; your veterinarian should contact a specialist for the latest drug regimen. Even if treatment ends clinical signs, some think such dogs will always be carriers. Thus, they should not be bred, even if they appear cured.

Spay or castrate affected dogs. This may decrease the shedding of *B. canis* in urine, semen or vaginal discharges, and also removes the hormonal influence the bacteria thrive under.

Isolate affected dogs. Do not take them to training classes or even out on walks.

What about my other dogs? Every dog in the household or kennel must be tested, and if negative, kept away from the affected dogs and retested monthly for three months. New dogs should not be brought into the house.

Can people catch it? Rarely, yes. People with compromised immune systems (such as those with HIV, those undergoing chemotherapy and transplant recipients), as well as the very young and very old, should keep away from infected dogs. Wear gloves when handling tissue or fluid from suspected dogs. If a potentially exposed person develops signs (fever, enlarged lymph nodes, sweating, body aches) tell their doctor of possible exposure. Human treatment is highly successful.

The bottom line? Brucellosis is a devastating disease that can wipe out breeding lines, but can be guarded against by practicing safe sex with pre-breeding testing of both stud and bitch – even virgin ones. The test is cheap, and a small price to pay for peace of mind.

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