



Information Sheet: *Brucella canis*

Introduction: In September 2012, *Brucella canis* was isolated from a dog in Hermanus, Western Cape. This disease has been present in South Africa since 2005, when it was isolate from two previously stray dogs in the Western Cape. It is highly likely that the disease is endemic in South Africa, considering that the animals from which it was isolated had all originated in South Africa, but that it is severely under-detected. We would like to encourage all vets to keep an eye out for suspect cases of *Brucella canis*.

Disease summary:

Brucella canis is a disease of domestic dogs and wild canids causing high levels of bacteraemia and reproductive failure. Almost all cases occurring in South Africa, however, have presented as discospondylitis. *B canis* is a zoonotic disease, but the risk of transmission to humans is currently considered to be low.

Epidemiological considerations:

Persistence in the environment: *B. canis* organisms can survive for extended periods of time in soil, water, organic material and on equipment, as long as it has no exposure to sunlight and conditions are of high humidity and low temperatures.

Transmission: It is highly contagious between dogs and is spread by mucosal contact with infected body fluids, especially those shed from urogenital system. Puppies can be infected in utero, during partus or through nursing. Infection can also occur through mucosal contact with contaminated fomites.

Incubation period: After initial infection causes lymphadenopathy, the bacteria colonise the genital system. Bacteraemia develops 1 to 4 weeks after infection and lasts for at least 6 months before becoming intermittent.

Clinical signs:

- Abortion in bitches at 45 to 55 days of gestation
- Vulvar discharge
- Birth of weak or stillborn puppies.
- Male dogs show epididymitis, scrotal dermatitis, testicular atrophy and poor semen quality.
- Infertility
- Lymphadenopathy

- Discospodylitis

Diagnosis:

A definitive diagnosis should be made by culturing the organism from a blood sample. *Brucella* species are slow-growing, and so the culture should be maintained for four weeks. A positive result should be confirmed by two different laboratories. False negatives are common and so this test should not be used to rule out a diagnosis of *B. canis*.

Presumptive diagnoses may be made using serological techniques, but should be confirmed by blood culture.

Sampling:

Whole blood in heparin should be taken for immediate bacterial culture and identification. Veterinarians taking samples should wear gloves and ensure that their premises and clothes are cleaned of all body fluids and disinfected before having contact with other animals. Samples taken are to be labelled clearly as "suspect *Brucella canis*" so that laboratory personnel may take the appropriate precautions, and must be transported on ice to a culturing laboratory within preferably 24 hours, but no longer than 48 hours after sampling.

Control:

In kennel situations or cases of stray dogs, euthanasia of positive animals is the control measure of choice. In the case of owned dogs where the owner refuses euthanasia, the following treatment plan can be considered. It is worth noting that this protocol requires high cost and degree of effort on the part of the owner.

- The positive animal and all other canids in the household must be immediately isolated from other canids.
- The positive animal must be sterilised.
- Long-term antibiotic treatment should be started, consisting of a combination of doxycycline and an aminoglycoside for at least 28 days. E.g. Doxycycline (30mg/kg PO bid for 28 days) and streptomycin (20mg/kg iv oid for 14 days).
- Upon completion of treatment, samples for blood culture should be taken at 7 days, 30 days and 180 days. For each test, three samples should be taken every second day within a six day period due to fluctuating levels of bacteraemia.

After three negative tests, further treatment is not required, but the owners must be vigilant for signs of a relapse. Treatment should continue indefinitely if the animal re-tests positive or if clinical signs return. Alternatively, euthanasia of animals that have not responded to treatment should be strongly considered. Owners should furthermore institute careful hygiene measures to minimize the risk of zoonotic transmission. They must be aware that treatment does not necessarily result in cure and that relapses are common, especially in male dogs where the bacteria reside in the prostate and are difficult to eliminate.

Owners must be informed that there is a zoonotic risk. Immunocompromised persons, the aged, children and pregnant women have an increased risk.

All dogs which were in-contact with the positive case, such as those that share a household or those that are visited must be tested.

If a premises is depopulated of canids, consideration should be given to keeping the area free of canids for a certain period of time until the risk of *B. canis* organisms persisting in the environment is low.

Brucella canis in humans:

The vast majority of reported, confirmed cases of *Brucella canis* cases in humans have been associated with assisting bitches during abortion. People who fear they may be infected should look out for symptoms that may include undulating fever, chills, pain in the joints, enlarged lymph nodes and fatigue. A health care provider should be consulted if any of these symptoms are noticed. The only reliable diagnostic test is blood culture and this should be requested for confirmation of the diagnosis. However, there is a high likelihood of false negative results and thus conclusive diagnosis of *Brucella canis* in humans is difficult.

Vaccination:

There is no vaccine available.

Reporting: All positive cases of *Brucella canis* are to be reported as soon as possible to a state veterinarian.

References:

1. Arizona Department of Health Services 2012 *Brucella canis*: questions and answers for veterinarians. Online at: <http://www.azdhs.gov/phs/oids/vector/brucella/pdf/BrucellaCanisQAvets.pdf> (accessed 20 Sep 2012)
2. Côté Etienne (ed) 2007 *Clinical veterinary advisor: dogs and cats*. Mosby Elsevier, St Louis: pp.162-163
3. Gouws TA, Janse van Rensburg WJ, Gray M et al 2005 *Brucella canis* in South Africa. *The Veterinary Record* 157:668
4. Kazmierczak J 2012 Public health implications of *Brucella canis* infections in humans. *Summary Findings and Recommendations of the Brucella canis Workgroup*, National Association of State Public Health Veterinarians Wisconsin
5. Personal communication with the following people:

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