Department of Primary Industries

primefact

Brucellosis (*Brucella suis*) in dogs – guidelines for veterinarians

July 2017, Primefact 1421, second edition
Veterinary Officer, Animal Biosecurity and Welfare, NSW DPI

Brucella suis (B. suis) has been detected in NSW dogs which have been pig hunting in Queensland and north-western NSW. It has also been detected in young dogs from pig hunting breeding without a history of exposure to pig hunting.

Clinical signs

Dogs infected with *Brucella suis* may remain bright, alert and show no obvious sign of infection. Otherwise the range of symptoms can include:

- Fever
- Enlarged testicle/s
- Enlarged prostate
- Back pain
- Lameness
- Vomiting
- Lethargy
- Enlarged lymph nodes
- Haematuria
- Abortion

Zoonotic risk and recommendations for Veterinarians

Infected dogs are a potential source of infection for people. The illness in people can be severe, protracted and potentially fatal. Infected dogs pose a risk to people through contact with urine, saliva and reproductive materials of infected dogs. Dogs are also able to act as mechanical carriers by shedding *Brucella* in their faeces after ingesting infected aborted foetuses or placentas.

Veterinarians handling and treating pig hunting dogs should protect themselves with Personal Protective Equipment (PPE) and use good personal hygiene. Particular care should be taken when treating wounds, collecting blood, neutering, assisting with whelping or reproductive problems and performing caesareans on pig hunting dogs. Further detail is provided in 'Safe work methods statement – *B suis* Sample Collection'.

Environmental Survival

Brucella spp may survive for months in the environment away from direct sunlight, and at low temperatures in organic matter. It also may survive in dust and soil particularly if organic matter is present.

Disinfectants which inactivate *Brucella* spp. on contaminated surfaces include 2.5% sodium hypochlorite (bleach) and 2-3% caustic soda. Contaminated skin may be cleaned with ethanol, isopropanol, iodophores (Iodine), substituted phenols or dilute hypochlorite.

Direct sunlight and autoclaving inactivate Brucella spp.

Routes of infection for dogs

B suis is endemic in feral pigs in Queensland and in North Western NSW and appears to be spreading to more southern and eastern feral pig populations within NSW. Pig hunting dogs can become infected during pig hunting or by being fed raw pig meat or offal from feral pigs.

It is suspected that young dogs with no pig hunting history have been infected around the time of birth and that infection may be transmitted by breeding dogs at mating. Dogs that wander and scavenge on dead pigs could also be infected.

Sample Collection and Testing

Dogs with suspect clinical signs and the presence of risk factors should be tested for *B. suis*.

Suitable specimens for laboratory testing include:

- Whole blood or serum samples submitted chilled for serology (Rose Bengal test (RBT) and complement fixation test (CFT))
- Tissues submitted fresh and chilled for bacterial culture.

There is no value in submitting fixed histopathology samples for *B. suis* testing.

There is no direct serological test available for *B. suis.* However, *B. abortus* is exotic to Australia and this bacterium is used as an antigen in the Rose Bengal test (RBT) to detect *B. suis* antibodies. The RBT is the screening test in all species. Positive and inconclusive results are subsequently tested with the confirmatory complement fixation test (CFT). Negative RBT results, but with a strong clinical picture and history suggestive of *B. suis* infection will also be tested with the CFT. Dogs should be re-tested in 6 weeks if both the RBT and CFT tests are inconclusive.

The RBT is a more sensitive serological test (81 - 87%) compared to the CFT (as low as 54%). The CFT is a more specific serological test (believed in the range 95-99%) compared to the RBT (86.3%). As neither test is 100% accurate a diagnosis of brucellosis (*B. suis*) infection in a dog will not rely solely on laboratory serological tests and the clinical picture and history must also be considered.

A negative RBT and CFT result means the dog does not have antibodies to *B. suis* at the time of testing. Veterinarians need to be aware that a serologically negative dog may have recently been infected with *B. suis* organisms and the test has been conducted before the body has had time to develop antibodies. In these cases with a strong case history and clinical signs, retesting is recommended in six weeks and PPE should be worn by veterinarians and staff when interacting with the dog.

B. suis infection can be confirmed by bacterial culture from tissues e.g. testicle/s.

Tissue samples must be submitted fresh, double bagged/potted (with at least one hard container), with clear identification that the package contains ‘Brucella Exclusion Tissue’ (e.g. a piece of paper immediately visible when package is opened).

For suspect animals undergoing castration/spay:

- For males, both testicles should be removed (closed castration) and submitted fresh.
- For females, the whole, fresh reproductive tract should be submitted.

Any aborted pups, material and membranes should be submitted whole and fresh.

Joint fluid can be collected from suspect joints using a needle and syringe but MUST be transferred to a yellow top container and clearly identified as joint fluid. Never put joint fluid in a blood tube as this could put laboratory staff at risk of being infected with the organism.

Tissue specimens should not be sliced open as this may increase the risk of human infection.

Specimens should be sent to the NSW DPI Laboratory Services, Elizabeth Macarthur Agricultural Institute, Woodbridge Road, Menangle NSW 2568. A veterinary specimen advice submission form must accompany specimens submitted to the laboratory. The NSW DPI Laboratory Services can be contacted by phone: 02 46406325 or 1800 675 623 and email: laboratory.services@dpi.nsw.gov.au.

The department will pay the laboratory fees for testing dogs suspected of *Brucella suis* infection as well as close (same owner) in-contact dogs of confirmed cases. The department will also pay for transport of the specimens if the department preferred couriers are used. Any additional costs are the responsibility of the dog owner. For more information on packaging and sending samples and preferred couriers see "Sample submission" page on the NSW DPI website.

Veterinary recommendations for owners of dogs diagnosed with *Brucella suis*

Owners should be provided with a copy of the Primefact Brucellosis *(Brucella suis)* in dogs Information Sheet'

The owner should be advised to contact their local public health unit on 1300 066 055 for advice on protecting themselves from the zoonotic risk posed by their infected dog.

The owner should be advised on reducing zoonotic risk by either euthanasing the dog or keeping the dog isolated from other dogs and vulnerable people while undergoing treatment (this includes desexing and an extended course of antibiotics). There are no treatments that guarantee to cure infections in dogs.

Having investigated the most likely source of the dog's infection, recommend to the owner that other dogs that have been in contact with the infected dog or have had similar high risk exposures are tested to determine their *Brucella suis* status. The Specimen Advice accompanying the samples submitted from the other at risk dogs should outline the source of risk.

NSW legislation

Brucellosis *(Brucella suis)* is a notifiable disease under NSW legislation. You can report suspected or confirmed brucellosis *(Brucella suis)* in animals in one of the following ways:

- Phone your Local Land Services on 1300 795 299; or
- Contact a NSW Department of Primary Industries veterinarian or regulatory officer; or
- Email NSW DPI at: biosecurity@dpi.nsw.gov.au

More information

For general enquiries on biosecurity phone: 1800 680 244 or email: biosecurity@dpi.nsw.gov.au

For updates go to www.dpi.nsw.gov.au/factsheets

Warning

ISSN 1832 6668

INT16/156315