

# Brucellosis

## An Emerging Disease of Dogs in Eastern Australia



### What is Brucellosis?

Brucellosis is a zoonotic disease caused by a type of bacteria called *Brucella*. Humans can become infected with *Brucella* bacteria through direct contact with contaminated tissue or fluids from animals. In people, *Brucella* infection causes non-specific symptoms, such as fever, sweating, loss of appetite or weight loss, fatigue, joint or body pain and headaches.

Most species of *Brucella* circulate in a small number of "reservoir hosts" that serve as a source of infection, but other animals (including humans) can become infected.

Around the world, animal reservoirs of Brucellosis pose an ongoing threat to human health, and Australia is no exception. There are four main species of *Brucella* that can cause disease in humans, each with a different reservoir host. All these species can also cause disease in dogs. Of these species, only *Brucella suis* is currently found in Australia.



***Brucella abortus***  
Reservoir Hosts:  
Cattle and Bison



***Brucella canis***  
Reservoir Host:  
Dogs



***Brucella suis***  
Reservoir Hosts:  
Pigs and Wild Boar



***Brucella melitensis***  
Reservoir Hosts:  
Sheep and Goats

New research suggests that brucellosis is an emerging disease in domestic dogs in Eastern Australia, particularly dogs involved in pig-hunting activities. Detection of *Brucella suis* in dogs from both Queensland and New South Wales raises concerns for novel avenues of human exposure, with pig hunters, veterinary personnel, animal health workers and dog breeders in these areas being at greatest risk.

### Brucellosis in Australia

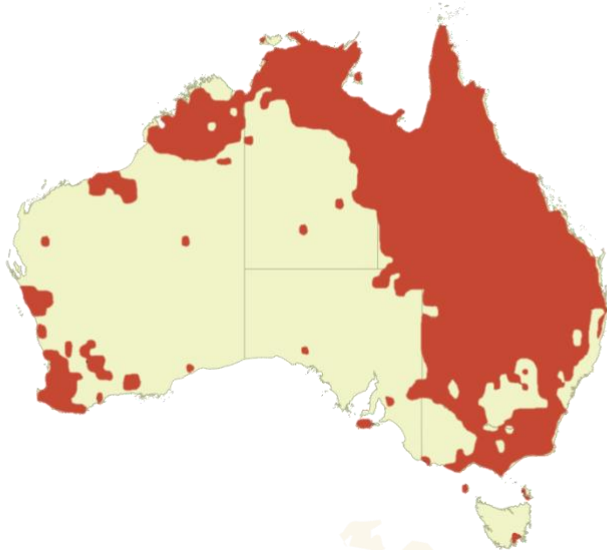
**Brucellosis is a nationally notifiable disease in Australia for people and animals.**

Data from the national notifiable disease surveillance from 1995 to 2016, shows that, on average, 30 cases of *Brucella* are diagnosed in humans every year, with most cases (over 80%) occurring in Queensland. Almost all cases of Brucellosis in Australia have been directly or indirectly linked to recreational pig hunting activities.

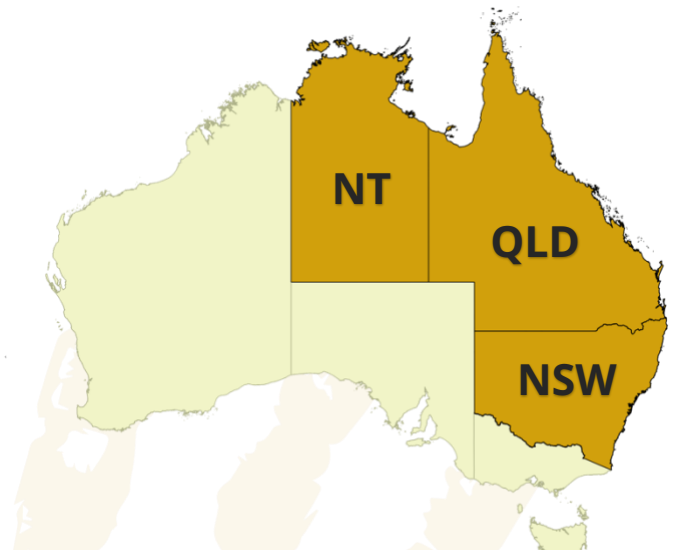
Of the four main species of *Brucella* that cause illness in people, only *Brucella suis* is found in Australia. *B. suis* normally infects domestic, wild, and feral pigs. It was first detected in domestic pigs in 1936 but has since been eradicated from commercial piggeries across Australia. However, *B. suis* is endemic in feral pig (*Sus scrofa*) populations in both Queensland (QLD), and New South Wales (NSW), where feral pigs are most abundant. Brucellosis has recently been detected in feral pigs in the Northern Territory. *B. suis* has been detected in 0%-3% of feral pigs in New South Wales, and 1.85%-10.5% of pigs in Queensland.

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Approximate distribution of feral pig populations in Australia. Adapted from Lapidge et al 2012.



Australian states and territories where *Brucella suis* has been detected in feral pigs.

### New Research on *B. suis* in Dogs

Before 2011, the only report of *B. suis* in dogs in Australia was from QLD, in 1968. However, the results from three recent studies raises concern that Brucellosis is an emerging disease in dogs in Eastern Australia, especially dogs that are used for pig hunting and those fed raw feral pig meat or offal.

- **Mor et al. (2016)**, showed a 17-fold increase in the number of cases of Brucellosis in dogs in NSW between 2011 and 2015; coinciding with the southern expansion of feral pig populations. Only 40% of the dogs in this study had symptoms at the time of testing.
- **Orr et al. (2022)**, found that 4.2% of pig hunting dogs from central, north, and far north QLD, as well as 0.9% of regional pet dogs from NSW tested positive for *B. suis*, between 2016 and 2018. All the dogs in this study were clinically normal at the time of sampling.
- **Kneipp et al. (2022)**, looked at "high-risk" dogs in Eastern Australia – including pig-hunting dogs and dogs fed feral pig meat – and found a prevalence of 9.3 per 100 dogs at risk, with the highest prevalence in central-west NSW and southern QLD. Dogs from southern QLD or NSW with a history of feral pig hunting had a one in 10 chance of testing positive for Brucellosis.

Based on this new evidence, dogs may serve as a source of infection for people, especially dogs that have been in contact with feral pigs or feral pig meat.

### How is *B. suis* Spread?

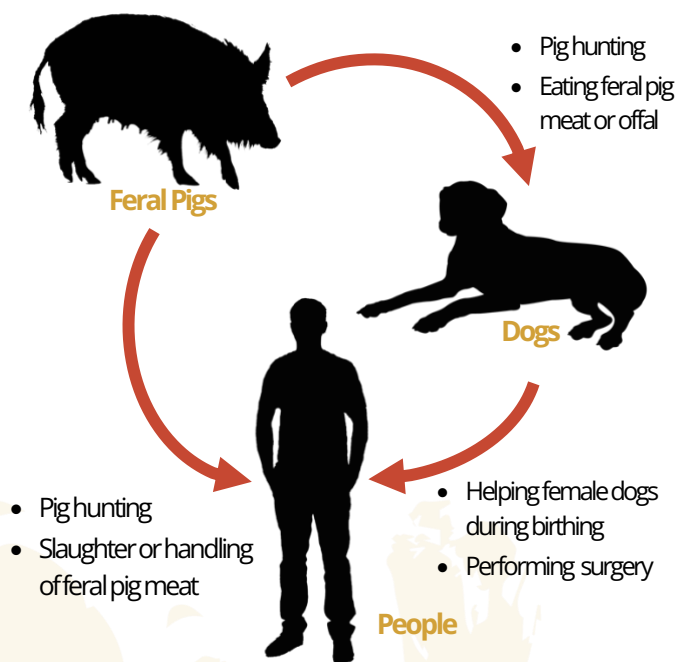
*Brucella* bacteria are mostly shed in birth products (such as the placenta, aborted fetuses, or birth fluids), discharge from the genitals, urine, and milk. The bacteria are spread to people and other animals when fluids or tissues containing *Brucella* bacteria come into contact with mucous membranes (such as the nose, mouth, and eyes) or breaks in the skin (such as cuts or abrasions).

Pig hunters and pig hunting dogs usually become infected with *Brucella* during hunting or slaughter of pigs. Both humans and dogs can also become infected by eating raw or undercooked feral pig meat or offal.

People also get *Brucellosis* from dogs if they come into contact with tissues or fluids from the dog that contain *Brucella* bacteria. Especially for pig-hunting dogs or dogs fed feral pig meat, activities such as helping female dogs give birth or surgical procedures performed by veterinarians, such as desexing, may increase the risk of getting *B. suis* from dogs. Infected dogs can also give Brucellosis to other dogs living in the same household.

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Main routes of transmission for *Brucella suis* to dogs and people.

### Risk Factors

#### For Dogs

- Being involved with pig hunting
- Eating raw feral pig meat or offal
- Living with a dog that has Brucellosis

#### For People

- Hunting and slaughter of feral pigs
- Handling, transport or processing of feral pig carcasses
- Assisting female dogs with birthing puppies
- Performing surgery on dogs (for example veterinarians performing desexing procedures).

### Who Has the Greatest Risk of Getting Brucellosis?

- Pig hunters and their household contacts
- People who handle or process of feral pig meat
- Laboratory workers handling *Brucella* samples
- Veterinary personnel and Animal Health Workers
- Dog breeders

### What are the Symptoms of Brucellosis?

*Brucella* is known as the “Great Imposter” as the clinical signs in both humans and animals can be mistaken for other illnesses. Asymptomatic infections are also common, which means that infected people or animals may not show any signs at all. Some of the common symptoms that can be seen with Brucellosis in pigs, dogs and people are listed below.

#### Symptoms in Pigs



- Reproductive losses (abortions, stillbirths, or weak piglets)
- Lameness or limping
- Paralysis of the back legs
- Swelling of the joints
- Swollen testicles

#### Symptoms in Dogs



- Reproductive loss
- Swelling of the testicles
- Back pain
- Lameness or limping

#### Symptoms in People



- Fever that comes and goes
- Sweating
- Loss of appetite
- Weight loss
- Fatigue
- Headaches
- Joint or body pain

Between 40-100% of *Brucella* positive dogs from recent studies did not have any symptoms at the time samples were taken, so it is important to remember that many dogs with Brucellosis may not show obvious signs of illness.



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### How Can I Reduce My Risk of Getting Brucellosis?

#### Pig Hunters

##### *While Hunting*

- Cover cuts and abrasions with waterproof gloves or dressings.
- Wear protective clothing, including waterproof closed-toed shoes or boots.
- Clean vehicles, work areas, and equipment after each hunt using water and proper disinfectants.
- Ensure proper hygiene and wash hands regularly.
- Avoid handling pigs that look sick.

##### *During Slaughter and Butchering*

- Wear protective clothing including overalls, gloves, eye protection and boots.
- Make sure you have good lighting, and that all equipment is in good working order, to avoid injuries.
- Do not drink, eat or smoke while handling animal tissues.
- Ensure proper hygiene and wash hands regularly
- Thoroughly cook feral pig meat before eating.

#### Pig Hunting Dogs

- Do not feed dogs raw feral pig meat or offal.
- Dogs should be thoroughly bathed after each hunt.
- If your dog is injured while hunting, clean and dress the wound and take the dog to a veterinarian.
- If your dog is sick, or is showing symptoms of Brucellosis, have your dog seen by a vet.

#### Veterinary Personnel and Animal Health Workers

- Wear gloves and eye protection when handling pigs and pig hunting dogs.
- Use extra caution when performing high risk procedures, such as wound management, blood collection, desexing and assisting with dystocia (including Caesarean sections) in pig hunting dogs or dog with a history of eating feral pig meat.

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