

## Brucellosis

**(*Brucella abortus*, *B. melitensis*, *B. suis*, *B. canis*, *B. ovis*)**

### DISEASE IN ANIMALS

Brucellosis is a bacterial disease usually associated with reproduction. Certain strains have affinity for certain species; however the organism can infect other species and man through close contact. Brucellosis is a bioterrorism agent. The Ohio Department of Agriculture (ODA) maintains a regulatory program to keep Ohio free of brucellosis in cattle, swine and dogs, but there are no regulatory programs for other species. Once infected, there is no treatment regimen known to be totally effective in eliminating the organism from infected animals. Infected animals should not be used for breeding. Euthanasia should be a consideration in all animal species, including pets.

**Reporting:** Clinically suspected animals with any *Brucella* are required to be reported to ODA at (614) 728-6220 or (800) 300-9755. This disease may also be reported to the USDA APHIS Veterinary Services at (614) 856-4735 or (800) 536-7593. Voluntary reporting to the local health department (LHD) of presumptive and confirmed cases thought to be *B. canis* is encouraged, especially where potentially infected animals may enter the pet market.

**Transmission:** Brucellosis is usually transmitted by direct contact with the placenta, fetus, fetal fluids and vaginal discharges from infected animals. More than 50% of infected animals have bacteremia for a year or more. Bacteria can also be found in urine, milk and semen. Shedding in milk and semen can be prolonged or lifelong.

**Clinical signs:** In general, abortions, infertility, weak offspring, but many cases are sub-clinical.

SPECIES AFFECTED	BRUCELLA SPP.	ABORTIONS/STILLBIRTHS	OTHER CLINICAL SIGNS
Cattle, Buffalo, Elk, Yak	<i>B. abortus</i>	Yes, 2nd half gestation	Weak calves
Sheep and goats	<i>B. melitensis</i> , <i>B. ovis</i> (sheep only)	Yes, late gestation sheep, 4th month in goats	Retained placenta, orchitis, epididymitis; in goats mastitis and lameness
Swine	<i>B. suis</i>	Yes, anytime in gestation	Weak piglets at birth; in boars orchitis and sterility
Horses	<i>B. abortus</i> , <i>B. suis</i> (rare)	Rarely	Fistulous withers or poll evil which is inflammation of supraspinous bursa
Dogs	<i>B. canis</i>	Yes, most often from day 45-59 of gestation	Infertility; in males testicular atrophy and epididymitis

**Diagnostics:** *Serologic screening tests are sensitive but are associated with high rates of false positive results. Consequently, a positive screening test is followed by confirmation using a more specific test.*

- Serology BBAT (buffered *Brucella* antigen test or card test), CF, ELISA, AGID: testing recommendations vary with the species. Serology is not useful in sexually immature animals.
- Rapid slide agglutination (RAST) and agar gel immunodiffusion using cell wall antigens (AGIDcwa): dogs
- Stained slides or IFA: of infected tissues or fluids may indicate brucellosis antigen
- Culture: aborted fetal tissues, blood, milk, semen, or vaginal secretions. A single negative blood culture does not rule out infection.
- PCR: available for some species
- Milk ring test: screen bulk milk samples

**Case classification:**

- Suspected: a clinical case with signs consistent with brucellosis
- Probable: a clinically suspect case with laboratory evidence from a screening or unvalidated test
- Confirmed: a case that meets confirmatory testing criteria determined by a state or federal diagnostic laboratory

**DISEASE IN HUMANS**

**Reporting:** Report by the end of the business week any suspected human illness or positive laboratory result to the LHD where the patient resides. If unknown report to the LHD of the health provider or laboratory.

**Human illness:** Brucellosis is a systemic disease with acute or insidious onset, characterized by fever of variable duration, headache, weakness, profuse sweating, chills, arthralgia, depression, weight loss and generalized aching. The fever may be continuous or intermittent. Localized suppurative infections of organs, including liver and spleen, may occur. Subclinical disease and chronic localized infections may occur. If not adequately treated, the disease can last for days, months, or occasionally for a year or more. Osteoarticular complications are seen in 20% - 60% of cases. Genitourinary involvement is reported in 2% - 20% of cases, with orchitis and epididymitis most commonly seen.

**Personal protection:** Brucellosis is highly pathogenic to humans. Veterinarians, farmers, dog breeders and laboratory workers are at high risk for exposure. Transmission occurs from contact with the organism through mucous membranes or broken skin following exposure to contaminated placenta, aborted fetuses or fetal fluids, or vaginal discharges from infected bitches during heat, breeding, abortion or full term parturition. Brucella can be aerosolized in animal pens or microbiology laboratories. It is also spread by fomites under conditions of high humidity, low temperatures and no sunlight. Precautions against direct contact, fomite contamination, and aerosol exposure should be implemented when handling ill and exposed animals and all birthing associated tissues and fluids. Consumption of unpasteurized milk and cheese from infected animals is also a source of human infections. Persons exposed to Brucella vaccine RB51 should seek medical advice for chemoprophylaxis.

Infected dogs may pose a risk to owners. Euthanasia should be considered. If that is not acceptable, neutering, routine monitoring, and counseling the owner on the zoonotic risk is warranted.

**FOR MORE INFORMATION****Reportable Animal Diseases in Ohio:**

[ODA Division of Animal Industry](#)

[OAC Chapter 901:1-21 Dangerously Contagious or Infectious and Reportable Diseases](#)

[USDA Animal and Plant Health Inspection Service](#)

**Disease in Animals**

[Ohio Animal Disease Diagnostic Laboratory](#)

[USDA Veterinary Services- Brucellosis](#)

[OIE Manual of Diagnostic Tests](#)

[AVMA Public Health Disease Information](#)

[Iowa State University Center for Food Security and Public Health Animal Disease Factsheets](#)

**Disease in Humans**

[ODH Infectious Disease Control Manual](#)

[CDC Brucellosis](#)