

# Brucellosis



Wetlands supporting  
groups of susceptible  
mammals

Wildlife ✓

Livestock ✓

Human ✓



Synonyms: Bang's disease, contagious abortion, enzootic abortion, epizootic abortion, Malta fever, Mediterranean fever, undulant fever

## KEY FACTS

<b>What is brucellosis?</b>	A chronic and contagious bacterial disease of domestic and wild animals that may be transmitted to humans. In animals, it causes reproductive problems ( <i>e.g.</i> abortions, stillbirth and infertility) and other signs, including arthritis in cows and pigs, mastitis and lameness in goats, and oozing skin lesions in horses. In humans, it causes influenza-like symptoms which can be severe and last for months and can be confused with malaria and typhoid.
<b>Causal agent</b>	Bacteria of the genus <i>Brucella</i> , infections are mainly caused by <i>B. abortus</i> , <i>B. melitensis</i> , <i>B. ovis</i> , <i>B. canis</i> , and <i>B. suis</i> .
<b>Species affected</b>	Many species of terrestrial and marine mammals, particularly cattle, swine, bison, elk <i>Cervus canadensis</i> , deer, goats, sheep, other ruminants and humans. Wildlife reservoirs do exist and can include feral pigs, bison, and elk amongst others.
<b>Geographic distribution</b>	Present to varying degrees in most countries of the world. High risk areas are the Mediterranean Basin (Portugal, Spain, Southern France, Italy, Greece, Turkey, North Africa), South and Central America, Eastern Europe, Asia, Africa, the Caribbean, and the Middle East.
<b>Environment</b>	Any environment supporting groups of susceptible mammals.

## TRANSMISSION AND SPREAD

<b>Vector(s)</b>	Although the bacteria is not vector-borne, it may be spread mechanically by infected animals and contaminated objects such as equipment, clothing, shoes, feed or water.
<b>How is the disease transmitted to animals?</b>	Direct contact with infected animals or with an environment that has been contaminated with birthing tissues or, most commonly, fluids from infected animals ( <i>e.g.</i> aborted foetuses, vaginal discharges). Animals may lick those materials or the genital area of other animals or ingest the disease-causing organisms with contaminated food or water. Venereal transmission is the most common means of spread but the bacteria can also be found in milk, blood, urine and semen.
<b>How does the disease spread between groups of animals?</b>	Brucellosis is usually spread from one animal group to another by an infected or exposed animal, <i>e.g.</i> by adding infected animals to a domestic herd or by infected animals mingling with brucellosis-free groups. Brucellosis can also be spread by contaminated objects (fomites) such as equipment, clothing, shoes, feed or water.

**How is the disease transmitted to humans?** Direct contact with tissues or fluids from infected animals and by eating contaminated food, especially unpasteurised dairy products. Person-to-person transmission is very rare but has occurred through transplants, sexual intercourse, or from mother to child.

## IDENTIFICATION AND RESPONSE

**Field signs** There is no effective way to detect infected animals by their appearance. The most obvious sign is abortion or birth of weak young. Milk production may be reduced, and other signs include an apparent lowering of fertility with poor conception rates, retained afterbirths with resulting uterine infections, and (occasionally) enlarged, arthritic joints.

**Recommended action if suspected** Contact and seek assistance from appropriate animal health professionals. Brucellosis caused by *B. abortus*, *B. mellitensis* or *B. suis* is notifiable to the OIE and suspected cases in livestock and humans should be reported to local and national authorities.

**Diagnosis** Confirmation is made with prescribed laboratory tests to isolate and identify the bacteria, through serological testing, or a combination of both, following OIE guidelines.

## PREVENTION AND CONTROL IN WETLANDS

**Environment** *Brucella* can survive for months in the environment under optimum conditions but can be destroyed by heat and some common disinfectants.  
► **Section 3.4.1. Disinfection and sanitation**

**Livestock** The disease in livestock may be avoided by employing good sanitation and animal management practices *e.g.*

- Preventing the introduction of infection through movement controls, testing and quarantine.
- Detecting any infected animals in the population as early as possible through surveillance, and thoroughly investigating all suspect cases.
- Eliminating any confirmed infection found in livestock through the slaughter of infected and exposed animals.
- Vaccination with an approved vaccine can be effective.
- Cleaning and disinfection of calving areas and other places likely to become contaminated with infective material.
- Placing barriers around stored feed and utilising biosecurity measures to decrease interaction between wildlife and livestock in areas with a wildlife reservoir.

**Wildlife** Control of the infection in wildlife requires management at the ecosystem scale. Eradication in wildlife is probably not feasible, but the following measures can help reduce prevalence:

- Preventing and controlling infection in domestic animals.
- Avoiding provision of artificial feeding grounds which concentrate susceptible animals (if existing, slowly phase-out).
- Protecting existing habitat and migration corridors (and increasing them where possible).
- Avoiding test-and-slaughter programmes as these have not been shown to control the disease but have been shown to exacerbate spread.
- Vaccination may be possible on a wildlife-appropriate scale if well thought-out and modelled beforehand.

## Humans

Risks to humans can be reduced by:

- Not eating or drinking raw or unpasteurised dairy products.
- Wearing protective clothing (gloves, masks) when handling reproductive tissues (assisting delivery of newborn animals).
- Always washing hands after touching animals.

## IMPORTANCE

### Effect on wildlife

There is evidence of widespread infection in some populations. The disease causes little morbidity or mortality, but effects at the population level are largely unknown. It can result in a negative perception of wildlife and increase exposure of wildlife to brucellosis (and additional diseases) through practices used to control movement, *e.g.* provision of feeding sites and fencing.

### Effect on livestock

Deaths are rare except in unborn animals, but the disease can be debilitating with obvious loss of productivity and welfare implications.

### Effect on humans

Human infection frequently occurs in regions where brucellosis persists in domestic animals. It is an important human disease in many parts of the world especially in the Mediterranean countries of Europe, north and east Africa, the Middle East, south and central Asia and Central and South America and yet it is often unrecognised and unreported.

### Economic importance

In developing countries, the disease in livestock has serious impacts on the livelihoods of farmers and may pose a barrier to trade or increase costs to farmers for testing and vaccination. The illness in humans is multisystemic and can result in economic losses due to the time lost from normal activities.

## FURTHER INFORMATION

### Useful publications and websites

- 📄 World Health Organization (WHO). **Brucellosis in humans and animals.** <http://www.who.int/csr/resources/publications/Brucellosis.pdf> [Accessed March 2012].
- 📄 Food and Agriculture Organization (FAO). **Animal production & health paper - guidelines for coordinated human and animal brucellosis surveillance (2003)** <http://www.fao.org/DOCREP/006/Y4723E/Y4723E00.HTM> [Accessed March 2012].
- 📄 Animal Production and Health Division, FAO, Rome. **Animal health disease cards: ovine/caprine brucellosis and bovine brucellosis.**
- 📄 Kolar, J. (1984). **Diagnosis and control of brucellosis in small ruminants.** *Preventive Veterinary Medicine*, 2, 215-225.
- 📄 Nicoletti, P. (1984). **The control of brucellosis in tropical and subtropical regions.** *Preventive Veterinary Medicine*, 2, 193-196.
- 📄 World Organisation for Animal Health (OIE). **Chapter 2.04.03: Bovine brucellosis.** Manual of diagnostic tests and vaccines for terrestrial animals. [http://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahm/2.04.03\\_BOVINE\\_BRUCCELL.pdf](http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.04.03_BOVINE_BRUCCELL.pdf) [Accessed March 2012].
- 📄 World Organisation for Animal Health (OIE). **Chapter 2.07.02: Caprine and ovine brucellosis.** Manual of diagnostic tests and vaccines for terrestrial animals. [http://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahm/2.07.02\\_CAPRINE\\_OVINE\\_BRUC.pdf](http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.07.02_CAPRINE_OVINE_BRUC.pdf) [Accessed March 2012].
- 📄 The Center for Food Security and Public Health (CFSPH). **Brucellosis factsheet.** <http://www.cfsph.iastate.edu/Factsheets/pdfs/brucellosis.pdf> [Accessed March 2012].
- 📄 World Health Organisation (WHO). **Brucellosis.** [www.who.int/zoonoses/diseases/brucellosis/en/](http://www.who.int/zoonoses/diseases/brucellosis/en/) [Accessed March 2012].

## Contacts

- ✉ **WHO Communicable Diseases Surveillance and Response (CSR).**  
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- 📄 **FAO Animal Production and Health Division.**  
[www.fao.org/ag/againfo/home/en/who.htm](http://www.fao.org/ag/againfo/home/en/who.htm)