



# BRUCELLOSIS: GENERAL DESCRIPTION, ETIOLOGY, EPIDEMIOLOGY, PREVENTION, AND EPIDEMIC CONTROL MEASURES

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**Abstract:** *Brucellosis is a widespread, highly dangerous zoonotic infectious disease of polyetiological origin. It is characterized by various routes of transmission, damage to multiple organs and systems—primarily the musculoskeletal and nervous systems—as well as manifestations of intoxication and allergic reactions. The infectious process typically progresses chronically and often leads to disability in affected individuals. This article provides a comprehensive overview of brucellosis, including its etiology, epidemiology, diagnostic and treatment methods, and proposes improvements in prevention and epidemic control strategies. The article also analyzes global experiences and modern approaches aimed at reducing the spread of infectious diseases.*

**Keywords:** *Brucellosis, infectious diseases, etiology, epidemiology, prevention, epidemic control measures.*

## Article Content

### Introduction:

Brucellosis is a highly contagious, zoonotic disease with multiple transmission routes, affecting various organs and systems—especially the musculoskeletal and nervous systems. It is characterized by systemic intoxication, allergic reactions, and a chronic infectious process that often leads to disability. The causative agents of brucellosis are microorganisms belonging to the genus *Brucella*.



## **Etiology:**

The genus *Brucella* consists of six main species, each subdivided into various biovars:

- ***Brucella melitensis*** – pathogenic to sheep and goats; can also affect other animal species. In Central Asia, particularly Uzbekistan, this species is of high clinical significance, accounting for over 90% of human cases.

- ***Brucella abortus*** – mainly affects cattle, causing abortions; it can also infect other animal species.

- ***Brucella suis*** – primarily pathogenic to pigs but can be transmitted to other animals and humans.

- ***Brucella neotomae*** – first isolated in 1957 in the United States (Utah) from desert woodrats.

- ***Brucella ovis*** – pathogenic to rams, primarily affecting reproductive organs (e.g., orchiepididymitis); may also cause abortions in ewes.

- ***Brucella canis*** – affects dogs, causing epididymitis and abortions.

## **Mechanism of Epidemic Development:**

Brucellosis primarily affects agricultural animals such as sheep, goats, cattle, pigs, camels, and reindeer. Each species tends to be infected by a specific type of *Brucella*. However, *B. melitensis* and *B. abortus* can cross-infect other species. Abortion events play a critical role in the epizootiology and epidemiology of brucellosis, as aborted fetuses, placentas, and reproductive discharges can release large quantities of *Brucella*, facilitating both direct and indirect transmission to other animals.



Infected animals release vast amounts of the pathogen during parturition or abortion. Additionally, *Brucella* can spread through milk, further contributing to the spread of infection within a farm and increasing the risk of human transmission.

Epidemiological control of brucellosis involves comprehensive surveillance, including the study of long-term disease dynamics across different population groups and age categories, analysis of clinical forms, assessment of population immunological structure, and examination of circulating *Brucella* species and recent epizootic trends in the region.

### **Prevention and Epidemic Control Measures:**

Brucellosis prevention involves veterinary-sanitary, agricultural, and medical-sanitary interventions aimed at eliminating the infection in animals and preventing human cases.

Recognizing brucellosis as a zoonotic infection, effective epidemic control must begin with animal infection prevention and eradication of epizootic outbreaks.

### **Medical and Sanitary Measures Include:**

1. Protecting individuals from infection.
2. Regular prophylactic screening of high-risk professional groups.
3. Public health education and sanitation awareness.

Human protection measures consist of general hygiene practices, veterinary controls, and the use of personal protective equipment (PPE). Specific actions include:

- Identification and neutralization of infection sources;
- Ensuring sanitary and hygienic conditions in farms and enterprises;



- Adhering to disinfection protocols;
- Following proper slaughtering procedures for animals from infected farms;
- Disinfecting tools, facilities, and transportation used in handling infected animals;
- Processing and using milk and meat from infected animals in compliance with health regulations;
- Enforcing animal handling protocols in farming operations.

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