

# BRUCELLOSIS

## Disease Overview

A bacterial disease of worldwide occurrence most often linked to contact with infected livestock or animal products contaminated with the bacteria. Reservoirs and sources of infection vary according to geographic area.

## Symptoms

Acute or insidious onset of symptoms with continued, intermittent or irregular fever, headache, weakness, sweating, fatigue, joint and muscle pain, anorexia and weight loss. The disease may last days, months or longer if not adequately treated.

## Reservoir

Cattle, swine, goats and sheep are most common. Infection can occur in camels, bison, elk, caribou and some deer species. Also, found in domestic and wild dogs and marine mammals (whales, dolphins, sea lions seals, and porpoises).

Worldwide distribution, especially in Mediterranean countries, middle east, Africa, central Asia, India, central and south America and Mexico.

## Mode of Transmission

Contact with infected animals and tissues (blood, urine, vaginal discharges, aborted fetuses and especially placentas) through mucous membrane exposure, breaks in skin integrity or aerosol inhalation. In addition, ingestion of undercooked meat, raw milk and dairy products (unpasteurized cheese) from infected animals.

Infection of workers in slaughterhouses and laboratories through airborne transmission has also been reported.

## Incubation Period

1-2 months, with a range of 5 days to 5 months.

## Period of Communicability

Person to person transmission is rare. Transmission has been documented from infected mothers to breastfed infants, and rarely through sexual contact.

## Risk Factors

Increased risk of acquiring/and or severe illness:

- Travel to endemic areas
- In endemic areas occupational risk factors - farm workers, hunters, veterinarians and slaughterhouse workers; medical personnel and laboratory workers
- Consumption of undercooked meat or unpasteurized dairy products.

## Surveillance Case Definition

### Confirmed case

Clinical illness with laboratory confirmation of infection:

- Isolation of *Brucella* sp. from an appropriate clinical specimen  
OR
- A significant (i.e., fourfold or greater) rise in *Brucella* agglutination titre between acute and convalescent serum specimens obtained 2 or more weeks apart and tested at the same laboratory

### Probable case

- Clinical illness in a person who is epidemiologically linked to a confirmed animal case  
OR
- Clinical illness with supportive serology (*Brucella* agglutination test titre of 1:160 or higher in one or more serum specimens obtained after onset of symptoms)

## Diagnosis and Laboratory Guidelines

Testing is done at the National Microbiology Laboratory. Cultures are done from appropriate clinical specimens (e.g. blood or bone marrow). Preliminary tests are polymerase chain reaction (PCR) tests followed by confirmatory testing for positive samples.

Turnaround time is 4 days for a preliminary result; 14 days for final culture result; and 29 days for final result of all other samples.

## Reporting

Per Policy 2.2 Disease and Event Notification to OCMOH and Disease and Event Reporting section.

- Routine Surveillance (RDSS)

## Case Management

### Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission and disease ecology
- Hand washing
- Food safety, especially to not consume undercooked meats or unpasteurized dairy products
- Animal handling precautions. Care in handling and disposal of placentas, uterine discharges and fetuses. Disinfect contaminated areas.
- Laboratory precautions

### Investigation

Based on symptom onset and possible incubation period, attempt to determine source of infection by questioning case on the following:

- travel history and associated activities

- food history, focusing on consumption of unpasteurized dairy products or un/undercooked meats
- Contact with animals and/or their tissues or body fluids, including domestic, wild and/or livestock
- Occupational risks or hobbies.

### **Exclusion/Social Distancing**

Not applicable

### **Treatment**

Brucellosis is treatable with antibiotics, but resistant to some antibiotics. Consult with an infectious disease specialist.

### **Immunization**

Not applicable

### **Contact Management**

Contacts should be investigated if they may have been exposed to a common source and/or are symptomatic.

### **Outbreak Management**

- Search for common source of infection-usually cheese or milk from an infected herd.
- Activate local outbreak management plan.

### **Management of Special Situations**

#### **Potential Agents of Bioterrorism**

Brucellosis is a potential agent of bioterrorism because it survives well in the environment, and is highly infectious in aerosol form or as a contaminant of food, milk and water by direct inoculation. Consider bioterrorism for two or more cases linked in time and place or a single confirmed case if not explained by either occupational risk or exposure in an endemic area; or if investigating a pneumonic case.

If bioterrorism is suspected:

- Consult with the **RMOH IMMEDIATELY**
- Inform relevant agencies and partners including Central Office, local law enforcement and others as appropriate.
- Take any relevant actions in order to prevent further human exposures.
- Establish if any actions to prevent further human or animal exposures are necessary.
- Determine if environmental or food samples need to be collected and analyzed.