" WOAH standards and recommendations on brucellosis: trends in spread, diagnostic approaches, control and prevention measures.”

Online Seminar for veterinary authorities of the Eurasian Economic Union member-states on the topic

WOAH Guidelines on Brucellosis
Focus: Trends, Diagnosis, Control & Prevention

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27.03.2026

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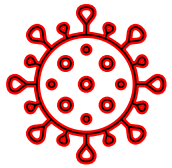
Introduction to Brucellosis

What is Brucellosis?

- Zoonotic bacterial disease caused by *Brucella* spp.
- Affects livestock: cattle, sheep, goats, pigs
- Transmissible to humans (public health concern)
- Causes reproductive losses (abortions, infertility)

Key WOAH Concern:

- Significant impact on animal health, trade, and food safety



CHAPTER 8.4.
INFECTION WITH BRUCELLA ABORTUS, MELITENSIS, AND SUIS
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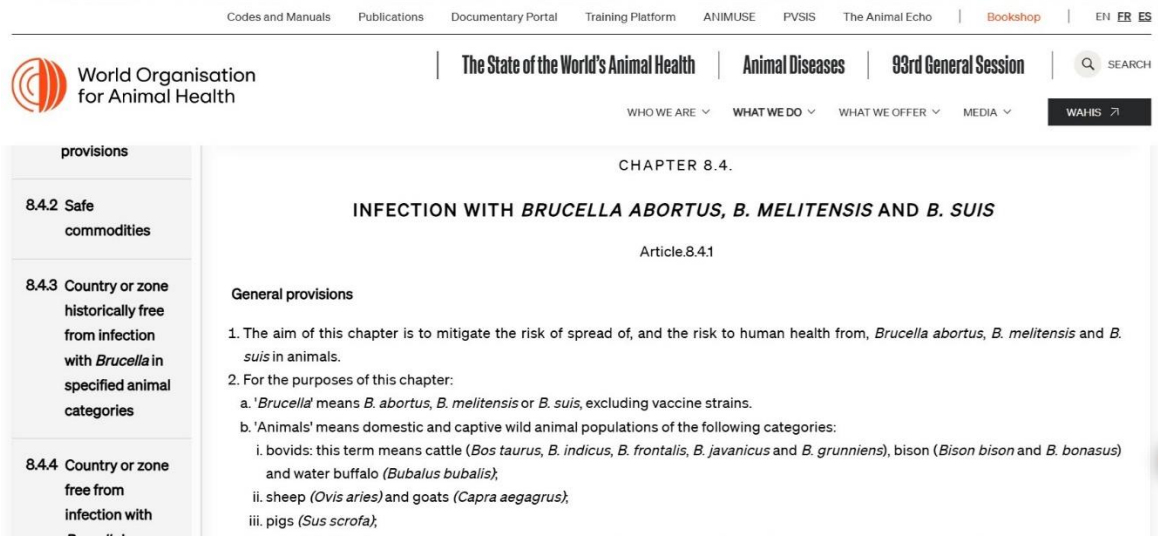

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provisions

8.4.2 Safe commodities

8.4.3 Country or zone historically free from infection with *Brucella* in specified animal categories

8.4.4 Country or zone free from infection with

CHAPTER 8.4.

INFECTION WITH *BRUCELLA ABORTUS, B. MELITENSIS* AND *B. SUIS*

Article.8.4.1

General provisions

1. The aim of this chapter is to mitigate the risk of spread of, and the risk to human health from, *Brucella abortus*, *B. melitensis* and *B. suis* in animals.
2. For the purposes of this chapter:
   a. '*Brucella*' means *B. abortus*, *B. melitensis* or *B. suis*, excluding vaccine strains.
   b. 'Animals' means domestic and captive wild animal populations of the following categories:
      i. bovids: this term means cattle (*Bos taurus*, *B. indicus*, *B. frontalis*, *B. javanicus* and *B. grunniens*), bison (*Bison bison* and *B. bonasus*) and water buffalo (*Bubalus bubalis*);
      ii. sheep (*Ovis aries*) and goats (*Capra aegagrus*);
      iii. pigs (*Sus scrofa*);

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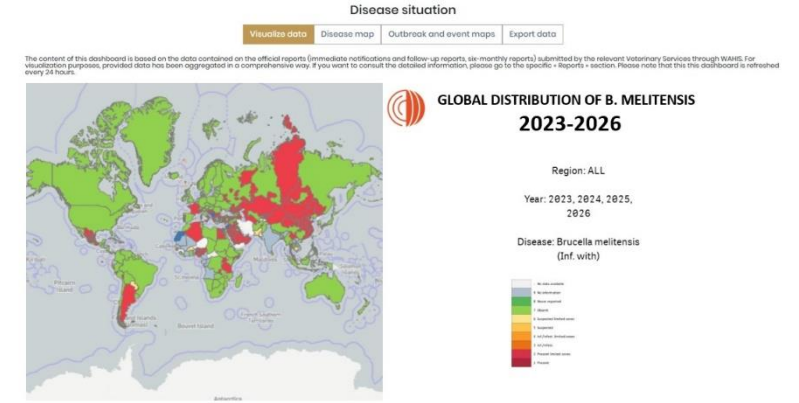
Trends in Global Spread

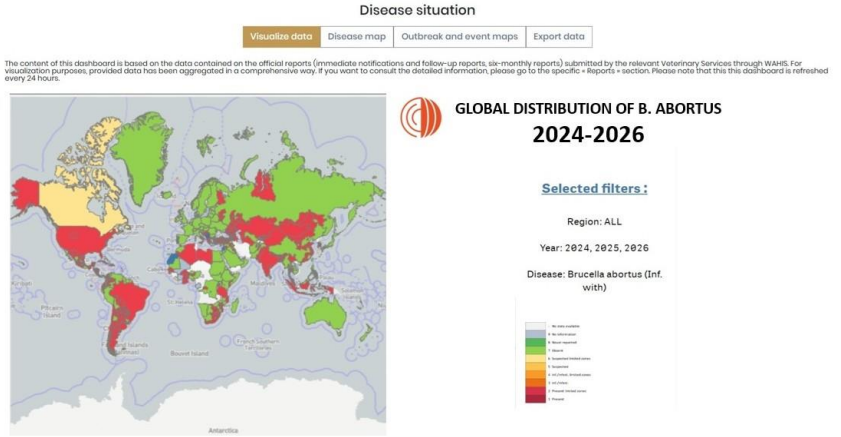
Epidemiological Trends

- Endemic in:
  - Africa
  - Middle East
  - Asia
  - Latin America
- Controlled/eradicated in:
  - Many parts of Europe
  - North America
  - Australia

Emerging Trends:

- Re-emergence due to:
  - Animal movement & trade
  - Weak veterinary infrastructure
  - Conflict zones





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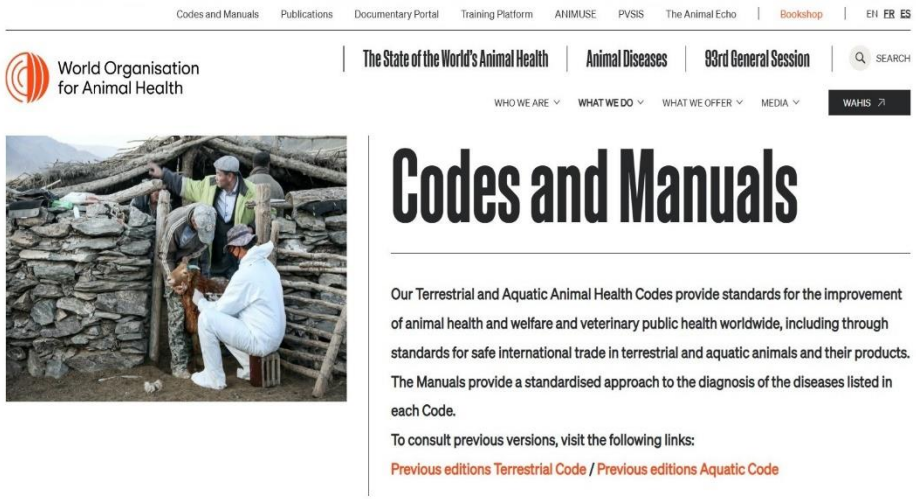
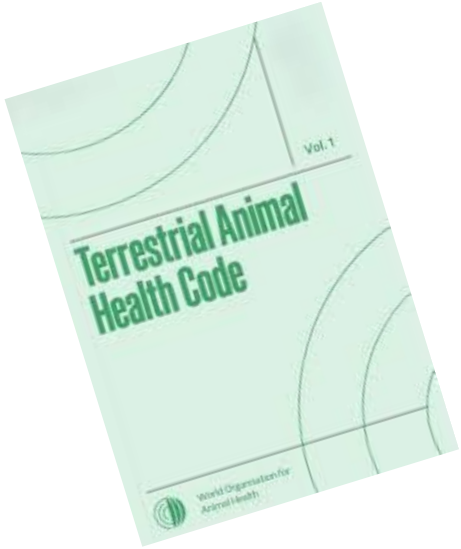
WOAH Role in Brucellosis Control

- Sets international standards (Terrestrial Animal Health Code)
- Provides diagnostic guidelines (Manual of Diagnostic Tests)
- Promotes disease notification & transparency
- Supports safe international trade





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Transmission Dynamics/How Brucellosis Spreads

Direct contact with:

- Infected animals
- Aborted fetuses, placenta

Indirect transmission:

- Contaminated environment
- Feed and water

Human infection:

- Raw milk consumption
- Occupational exposure

Diagnostic Methods for Brucellosis(WOAH Standards) Core Diagnostic Strategy

WOAH recommends a combination approach:

Initial Screening Tests (Serological Tests) first-line tests.

Common screening tests include:
- Rose Bengal Test (RBT)
- ELISA (Indirect or Competitive)
- Complement Fixation Test (CFT)

Purpose
- Rapidly screen large numbers of animals or herds
- Identify suspected positive animals

Why screening is needed
- Fast
- Cost-effective
- Suitable for surveillance programs

Confirmatory Testing

Examples include:
- Complement Fixation Test (CFT)
- Competitive ELISA
- PCR (Polymerase Chain Reaction)

Purpose
- Confirm whether the animal is truly infected
- Reduce the risk of false positives

Bacterial Isolation (Gold Standard) *Brucella* bacteria from tissues or fluids.

Samples may include:
- Aborted fetuses
- Placenta
- Milk
- Blood
- Lymph nodes

Why is it the gold standard
- It directly proves the presence of the bacterium
- Allows species identification (e.g., *B. abortus*, *B. melitensis*, *B. suis*)

Limitations
- Requires biosafety level 3 laboratory conditions
- Time-consuming
- Risk of laboratory infection, since *Brucella* is highly infectious

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Control Strategies (WOAH Guidelines)

Core Control Measures

- Test-and-slaughter policies
- Vaccination programs
- Movement control of animals
- Surveillance systems

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CHAPTER 3.1.4.

BRUCELLOSIS (INFECTION WITH *BRUCELLA ABORTUS, B. MELITENSIS* AND *B. SUIS*)

SUMMARY

Description of the disease: *Brucellosis is the generic name used for the animal and human infections caused by several species of the genus Brucella, mainly Brucella abortus, B. melitensis and B. suis. infection with Brucella in cattle is usually caused by B. abortus, less frequently by B. melitensis, and occasionally by B. suis. Brucella melitensis is the main causative agent of infection with Brucella in sheep and goats. Brucella melitensis and B. abortus may also infect other species, including camels. infection with Brucella in pigs is due to B. suis biovars 1–3, but the disease caused by biovar 2 differs in its host range and its limited geographical distribution. In some areas, B. suis infection*

C. REQUIREMENTS FOR VACCINES AND DIAGNOSTIC BIOLOGICALS

1. Vaccines

As mentioned previously, brucellosis is one of the most easily acquired laboratory infections, and strict safety precautions should be observed. Laboratory manipulation of live cultures of *Brucella,* including vaccine strains, is hazardous and must be performed at an appropriate biosafety and containment level determined by biorisk analysis (see Chapter 1.1.4). The S19, RB51 and Rev.1 vaccines have some virulence for humans, and a hazard warning should be included on the label of the final containers. Medical advice should be sought in the event of accidental inoculation or exposure (see Section C.1.2.3.2.3 Precautions) (Ashford *et al.*, 2004; Joint FAO/WHO Expert Committee on Brucellosis, 1986; USDA, 2003).

Key Vaccines

- Brucella abortus S19 / RB51 (cattle)
- Brucella melitensis Rev.1 (sheep/goats)

WOAH Guidance:

- Use in endemic regions
- Combine with surveillance

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Biosecurity and Public Health Prevention

1. Farm-Level Biosecurity Measures

- Isolation of infected animals
- Proper disposal of aborted materials
- Strict disinfection protocols
- Controlled breeding practices

2. Public Health Protection Measures

- Pasteurization of milk and dairy products
- Use of personal protective equipment (PPE)
- Awareness and education in high-risk occupations

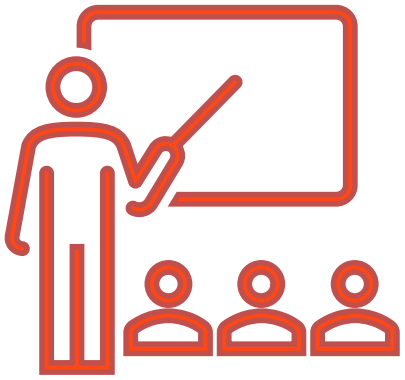
Surveillance & Reporting

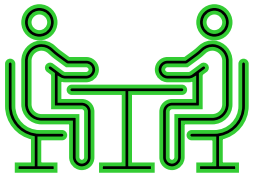
WOAH Requirements

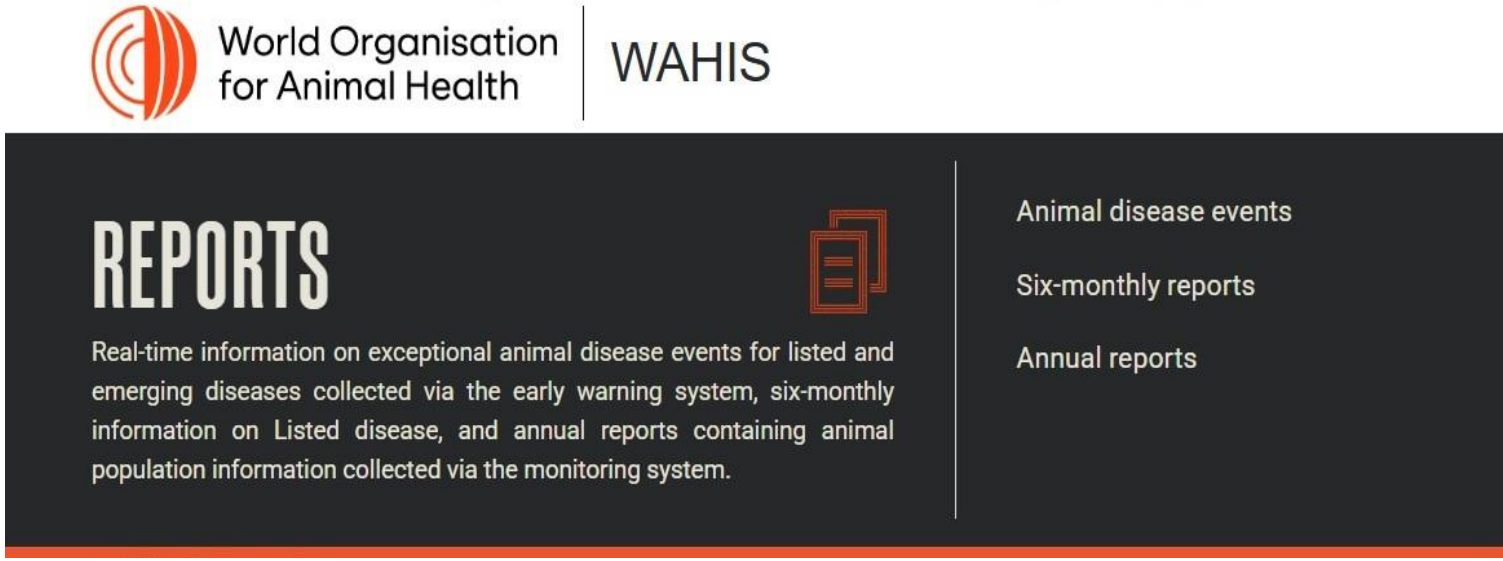
- Mandatory disease notification
- Active & passive surveillance
- Traceability systems

Goal:

- Early detection and rapid response







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Challenges and Future Directions in Brucellosis Control

Key Challenges

- Limited resources in endemic regions
- Lack of farmer awareness
- Presence of wildlife reservoirs
- Inconsistent vaccination coverage

Future Directions

- Development of enhanced diagnostics (rapid field tests)
- Adoption of a One Health approach
- Strengthening veterinary services
- Increased global collaboration

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Conclusion

Key Takeaways

- Brucellosis remains a global zoonotic threat
- WOAH provides critical standardized guidelines
- Effective control requires:
  - ✓Accurate diagnosis
  - ✓Vaccination
  - ✓Surveillance
  - ✓Biosecurity

References and Acknowledgment

- **WOAH Terrestrial Animal Health Code**
- **WOAH Manual of Diagnostic Tests**

SPECIAL THANKS TO:

WOAH Science Department
WOAH WAHIS Team
SRR Astana
RR for Asia and the Pacific

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