Brucellosis

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FAQ

1. What is brucellosis?

It is a contagious, costly disease of ruminant animals that also affects humans. Although brucellosis can attack other animals, its main threat is to cattle, sheep and goats, and swine. It can also affect wildlife.

2. How serious is brucellosis?

Considering the damage done by the infection in animals such as decreased milk production, weight loss in animals, loss of young, infertility, and lameness, it is one of the most serious diseases of livestock. The rapidity with which it spreads and the fact that it is transmissible to humans makes it all the more serious.

3. What disease agents cause brucellosis?

The disease is caused by a group of bacteria known scientifically as the genus Brucella. Three species of Brucella cause the most concern: B. abortus, principally affecting cattle; B. suis, principally affecting swine; and B. melitensis, affecting sheep and goats. Bacteria are shed in milk or via the aborted fetus, afterbirth, or other reproductive tract discharges.

4. What are the clinical signs of brucellosis?

There is no effective way to detect infected animals by their appearance. The most obvious signs in pregnant animals are abortion or birth of weak calves. Milk production may be reduced from changes in the normal lactation period caused by abortions and delayed conceptions. Not all infected cows abort, but those that do usually abort between the fifth and seventh month of pregnancy. Infected cows usually abort once, but a percentage will abort during additional pregnancies, and calves born from later pregnancies may be weak and unhealthy. Even though their calves may appear healthy, infected cows continue to harbour and discharge infectious
organisms and should be regarded as dangerous sources of the disease. Other signs of brucellosis include an apparent lowering of fertility with poor conception rates, retained afterbirths with resulting uterine infections, and (occasionally) enlarged, arthritic joints.

5. **How is brucellosis spread?**

Brucellosis is commonly transmitted to susceptible animals by direct contact with infected animals or with an environment that has been contaminated with discharges from infected animals. Aborted fetuses, placental membranes or fluids, and other vaginal discharges present after an infected animal has aborted or calved are all highly contaminated with infectious *Brucella* organisms.

6. **What is being done to fight brucellosis?**

In the developed world, programs to eliminate the disease from the country are implemented. Like other animal disease-eradication efforts, success of the program depends on the support and participation of livestock producers. In the developing world, the disease is at best controlled but often baseline information is missing.

7. **How do epidemiologists help fight brucellosis?**

Epidemiologists are specially trained veterinarians who investigate disease sources and the means of eliminating infection in affected herds and areas. Epidemiologists are concerned with disease in a group or population of animals and evaluate circumstances connected with the occurrence of disease. These veterinarians help eliminate brucellosis by identifying factors essential to its control and prevention.

8. **How costly is brucellosis to the livestock industry?**

In the US, annual losses from lowered milk production, aborted calves and pigs, and reduced breeding efficiency have decreased from more than $400 million in 1952 to less than $1 million today. Studies have shown that, if brucellosis eradication program efforts were stopped, the costs of producing beef and milk would increase by an estimated $80 million annually in less than 10 years.

9. **What is the basic approach to eradication?**

The basic approach has always been to test cattle for infection and send infected animals to slaughter. Identification of market animals for tracing, surveillance to find infected animals, investigation of affected herds, and vaccination of replacement calves in high-risk areas are important features of the current program.
10. How is infection found in cattle?

Two primary surveillance procedures are used to locate infection without having to test each animal in every herd. Milk from dairy herds is checked two to four times a year by testing a small sample obtained from creameries or farm milk tank for evidence of brucellosis. Cattle herds that do not produce milk for sale are routinely checked for brucellosis by blood-testing animals sold from these herds at livestock markets or at slaughter. In addition, it is sometimes required that adult cattle and bison are subjected to blood tests for brucellosis upon change of ownership even if sold directly from one farm to another.

11. Can brucellosis in animals be cured?

No. Repeated attempts to develop a cure for brucellosis in animals have failed. Occasionally, animals may recover after a period of time. More commonly, however, only the signs disappear and the animals remain diseased. Such animals are dangerous sources of infection for other animals with which they associate.

12. Can brucellosis be prevented?

The disease may be avoided by employing good sanitation and management practices. Replacement animals should be tested when purchased and retested after a 30- to 60-day isolation period during which they are kept separate from the remainder of the herd. These practices will allow detection of animals that were in the incubation period of the disease when acquired.

13. What about vaccination?

For cattle and bison in heavily infected areas or replacement animals added to such herds, officials recommend vaccinating heifers with an approved *Brucella* vaccine. The vaccine is a live product and must be administered only by an accredited veterinarian. For best results, female calves should be vaccinated when they are 4 to 6 months old. At the time of vaccination, a tattoo is applied in the ear; that tattoo identifies the animal as an "official vaccinate." The tattoo identifies the year in which vaccination took place.

14. Are all the *Brucella* species zoonotic?

No. The most dangerous ones are *B. melitensis*, *B. abortus*, and *B. suis*. The vaccine strains S19, Rev. 1 and RB51 may also infect humans. Among the *B. suis* biovars, *Brucella suis* biovar 2 (which infects wildboars and hares in Europe) is not pathogenic for humans. Likewise, *B. ovis* is not pathogenic for humans. *Brucella canis* may occasionally infect humans.
15. Which humans are at risk for brucellosis?

Everyone is susceptible to the bacteria and may get the disease if exposed. People usually are infected in one of three ways: eating or drinking something that is contaminated with \textit{Brucella}, breathing in the organism (inhalation) or having the bacteria enter the body through skin wounds. The most common ways to be infected include eating or drinking contaminated, non-pasteurized milk products and working with infected animals or their tissues.

16. What are the symptoms of brucellosis in humans?

Symptoms of brucellosis include irregular fevers of varying lengths, headache, weakness, swollen lymph nodes, excessive sweating, chills, weight loss and generalized aching. How soon do symptoms appear? The time period is highly variable, five to 60 days, but symptoms usually appear within one to two months. How is brucellosis spread? Direct person-to-person spread of brucellosis is extremely rare. Rare instances of infected mothers who are breast-feeding, sexual transmission and contaminated tissue transplantation have been reported. Typically, brucellosis is spread by eating non-pasteurized milk and other dairy products from infected cows and goats. People also may become infected when they work or handle blood, urine, discharges and aborted fetuses from infected cattle, pigs or goats. In this case, infection occurs through cuts and scrapes in the skin or breathing the bacteria in the air. When and for how long is a person able to spread the disease? It is unlikely that this disease could spread from person to person. How is a person diagnosed? Brucellosis may be diagnosed in a laboratory by looking at samples of blood or bone marrow. If you think you have brucellosis, contact your health-care provider.

17. How are humans treated?

Brucellosis can be treated with antimicrobial drugs, but treatment can be difficult. Doctors may prescribe doxycycline and rifampin in combination for six weeks to prevent recurring infection. Depending on the timing of treatment and severity of illness, recovery may take a few weeks to several months. Fewer than 2 percent of people who have the disease die.

18. Does past infection make a person immune?

It is unlikely that an individual will develop the disease again.

19. Should children or others be excluded from day care, school, work or other activities if they have brucellosis?

No. Infants, toddlers and school-age children should not be excluded unless the staff determines the child is unwilling or unable to participate in activities. They also should be excluded if the staff determines that they cannot care for the child without compromising their ability to care for the health and safety of the other children in the group. All others can attend work and other functions.
as long as they are well enough to do so. As always, good hand washing and respiratory etiquette is recommended.

20. What can be done to prevent the spread of brucellosis among humans?

The control of the human disease depends on the removal of the disease in cattle, goats, swine and other animals. Pasteurization of milk and milk products, including soft cheeses, which are meant for human consumption is important to prevent disease. The certification of raw milk does not eliminate the risk of transmission of *Brucella* bacteria.