

Facts About Brucellosis

1. What is brucellosis?

It is a contagious, costly disease of ruminant (E.g. cattle, bison and cervids) animals that also affects humans. Although brucellosis can attack other animals, its main threat is to cattle, bison, cervids (E.g. elk and deer), and swine. The disease is also known as contagious abortion or Bang's disease. In humans, it's known as undulant fever because of the severe intermittent fever accompanying human infection or Malta fever because it was first recognized as a human disease on the island of Malta.

2. How serious is brucellosis?

Bovine brucellosis is a serious disease of livestock that has significant animal health, public health, and international trade consequences. Considering the damage done by the infection in animals — decreased milk production, weight loss, loss of young, infertility and lameness — this disease is a formidable threat to livestock. The fact that this disease can spread rapidly and be transmitted 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, bison and cervids; *B. suis*, principally affecting swine and reindeer but also cattle and bison; and *B. melitensis*, principally affecting goats but not present in the United States. In cattle and bison, the disease primarily localizes in the reproductive organs and/or the udder. Bacteria are shed in milk or via the aborted fetus, afterbirth, or other reproductive tract discharges.

4. What are the 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. Calves from infected cows may have latent infections, i.e. infections that are not detected until they become pregnant, abort or give birth. Even though their calves may appear healthy, infected cows continue to harbor 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. Cows may lick those materials or the genital area of other cows or ingest feed or water contaminated with the disease-causing organisms. Despite occasional exceptions, the general rule is that brucellosis is carried from one herd to another by an infected or exposed animal. This mode of transmission occurs when a herd owner buys replacement cattle or domestic bison that are infected or have been exposed to infected animals, animal tissues or animal discharges prior to purchase. The disease may also be spread when wild animals or animals from an affected herd mingle with brucellosis-free herds.

6. What is the incubation period of brucellosis?

An incubation period is the interval of time between exposure to an infectious dose of organism and the first appearance of disease signs.

The incubation period of brucellosis in cattle, bison, and other animals is quite variable ranging from about 2 weeks to 1 year and even longer in certain instances. When abortion is the first sign observed, the minimum incubation period is usually about 30 days. Some animals abort before developing a positive reaction to the diagnostic test. Other infected animals may never abort. Generally, infected animals that do not abort develop a positive reaction to the diagnostic test within 30 to 60 days after infection, although some may not develop a positive reaction for several months to over a year.

7. 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.

8. Can brucellosis be avoided?

Yes. Brucellosis may be avoided by using proper sanitation methods. Proper herd management strategies can also aid in the avoidance of the disease. These include: Maintaining closed herds, recording individual animal identification and maintaining accurate records, isolating and testing purchased additions as well as cattle re-entering the herd and arranging diagnostic workups and necropsies for potentially or suspected brucellosis infected cattle.

9. Is there a program to eradicate brucellosis?

Yes. In 1954 Congressional funds were first approved for a Cooperative State - Federal Brucellosis Eradication Program to eliminate the disease from the country. Like other animal disease eradication efforts, success of the program depends on the support and participation of livestock producers. The basic approach has always been to vaccinate calves, test cattle and domestic bison for infection, and send infected animals to slaughter. Depopulation of herds, if funds are available, may be used if herds are severely affected. Identification of market animals for tracing, surveillance to find infected animals, investigation of affected herds, and vaccination of replacement calves in brucellosis-affected areas are important features of the current program. The program's Uniform Methods and Rules set forth the minimum standards for states to achieve eradication. States are designated brucellosis free when none of their cattle or bison is found to be infected for 12 consecutive months under an active surveillance program. For current Brucellosis State classifications see the updates posted at:

http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalhealth?1dmy&urile=wcm%3apath%3a%2Faphis_content_library%2Fsa_our_focus%2Fsa_animal_health%2Fsa_animal_disease_information%2Fct_status_of_eradication_programs

and

http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalhealth?1dmy&urile=wcm%3apath%3a%2Faphis_content_library%2Fsa_our_focus%2Fsa_animal_health%2Fsa_animal_disease_information%2Fsa_cattle_health%2Fsa_tb_bruc%2Fct_monthly_rpt

10. How effective is the Brucellosis Eradication Program?

At the beginning of the program, brucellosis was widespread throughout U.S. livestock, but eradication efforts have had dramatic results. In 1956, there were 124,000 affected herds found by testing in the United States. By 1992, this number had dropped to 700 herds and the number of affected, domestic herds has declined to single digits since then. USDA, APHIS, Cooperative State Federal Program continues to work towards achieving the goal of nationwide eradication of brucellosis from domestic cattle and bison. Currently all 50 states, Puerto Rico and the U.S. Virgin Islands are brucellosis Class Free.

11. How costly is brucellosis to the livestock industry?

The livestock and dairy industries and the American consumer have realized great financial savings from the success of the Cooperative State Federal Brucellosis Eradication Program. 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.

12. Is there a national surveillance strategy?

Yes. The objective is to have a strategy that will maintain confidence that brucellosis is present in less than one animal per million in the national beef and dairy cattle herd. Domestic bison are also included in the surveillance strategy. This sampling approach moves away from census-based sampling originally designed for disease eradication to one more appropriate for the current situation.

Using statistical sampling for slaughter surveillance based on the national cattle herd size, this strategy will result in an approximate 50 percent or greater reduction in the number of slaughter surveillance samples needed. The plan eliminates State-by-State census sampling while still effectively demonstrating the national herd's disease-free status. This national status based surveillance strategy exceeds the standards set by the World Organization for Animal Health (OIE) for a country recognized as disease-free for brucellosis.

13. How is infection found in cattle and domestic bison?

Two primary surveillance procedures are used to locate infection without having to test each animal in every herd. Milk from dairy herds is checked, in some states, two to four times a year

by testing a small sample obtained from creameries or farm milk tanks for evidence of brucellosis. Cattle and domestic bison herds that do not produce milk for sale are routinely tested for brucellosis by blood-testing animals sold from these herds at livestock markets, in some states, or at federally designated slaughter facilities. With certain exceptions, herd tests for disease investigations must include all cattle and bison over 6 months of age except steers and spayed heifers. In addition, some states require adult cattle and bison be subjected to blood tests for brucellosis upon change of ownership even if sold directly from one farm to another. If brucellosis test positive animals are detected in surveillance testing, the cattle and bison remaining in the herds from which such animals originated are tested.

14. Is identification of market cattle and domestic bison important?

Yes. Market Cattle Identification (MCI) provides a means of determining the brucellosis status of animals marketed from a large area and eliminates the need to round up cattle and bison in all herds for routine testing. MCI, along with preliminary testing procedures, is effective in locating brucellosis infection so control measures can be taken to contain the disease and eliminate it. The key to the MCI program is proper identification of all animals so they can be traced to their herds of origin. Most livestock markets identify cattle and bison with numbered USDA-approved backtags. Backtags, as well as eartags and other man-made identification devices, are collected at slaughter facilities and sent to the diagnostic laboratory along with the matching blood samples to aid in identifying ownership of test-positive animals. MCI is important for locating, controlling brucellosis and other diseases.

15. What happens if evidence of brucellosis is found?

When an affected herd is located, the infection is contained by quarantining all infected and exposed cattle and bison and limiting their movement to slaughter only. This is done until the disease can be eliminated from the herd. Depopulation of brucellosis affected herds is recommended if funding is available.

Diagnostic tests are used to find all infected cattle and bison in the herd, to determine if adjacent herds are affected, to determine the most probable source of the infection, and to determine if the disease may have been transmitted to other herds.

Epidemiologists, specially trained veterinarians, investigate disease sources and develop herd plans for affected herds, possibly exposed herds, and area herds to control, eradicate, and prevent the spread of the disease.

16. Is there a vaccine for brucellosis?

Yes. The brucellosis vaccine is called RB51. RB51 works by producing an immune response that increases the animal's resistance to the disease. The vaccine is a live product and must be administered only by an accredited veterinarian or State or Federal animal health official. Vaccination is not 100 percent effective in preventing brucellosis; it typically protects about 70-80 percent of the vaccinated cattle from becoming infected by an average exposure. For best results, female calves should be vaccinated when they are between 4 months and 1 year old. At the time of vaccination, a tattoo is applied in the ear which identifies the animal as an "official vaccinate." The tattoo identifies the RB51 vaccine and the year in which vaccination took place. Vaccination is an important tool in the control, management and elimination of brucellosis. Every cattle or domestic bison owner, regardless of location, should discuss the advantages and disadvantages of vaccination with his or her veterinarian. Some States do not allow cattle and domestic bison to be imported for breeding if they are not official brucellosis vaccinates and they

are beyond the age at which they should have been vaccinated.

In brucellosis affected areas such as the Greater Yellowstone Area, revaccination of female cattle or domestic bison at 3 to 5 year intervals is recommended. This gives much better protection to the herd.

17. What about wildlife, free-ranging bison and elk herds?

Brucellosis-affected wildlife can transmit the disease to domestic livestock. To demonstrate the disease-free status of the United States, we must lessen risks of brucellosis transmission from wildlife to livestock.

The presence of brucellosis in free-ranging bison and elk in the Greater Yellowstone Area (GYA), Yellowstone National Park and Grand Teton National Park and the area around those parks, threatens the brucellosis status of the surrounding States and the health of their cattle and domestic bison herds, which are free of the disease. Reintroduction of the disease into a brucellosis-free State could have a serious economic impact on domestic livestock markets and potentially affect export markets. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is working cooperatively with State and other Federal agencies toward containing the spread of brucellosis from free-ranging bison and elk to domestic bison and cattle and eliminating the disease from the GYA while maintaining viable free-ranging bison and elk herds in the GYA and in the Parks.

18. How does brucellosis affect humans?

People infected with the brucellosis organism usually develop symptoms similar to a severe influenza, but this disease, called undulant fever, persists for several weeks, months or longer and may get progressively worse if it is not treated. The initial symptoms are fatigue and headaches, followed by high fever, chills, drenching sweats, joint pains, backache, and loss of weight and appetite. Long-term effects can include arthritis, swelling of internal organs, depression, chronic fatigue and recurrent fevers. Undulant fever does not often kill its victims, but the disease is too serious to be dealt with lightly. Farmers, ranchers, veterinarians, and packing plant workers are more vulnerable to becoming infected because they come into direct contact with infected animals and tissues from those animals.

19. What are the main sources of human infection?

The most common way to be infected is by eating or drinking contaminated, unpasteurized milk products. When sheep, goats, cows, or camels are infected, their milk is contaminated with the bacteria. If the milk is not pasteurized, these bacteria can be transmitted to persons who drink the milk or eat cheeses and other dairy made from it. Humans can also contract the disease when slaughtering infected animals or when processing contaminated organs from freshly-killed, brucellosis infected livestock, wildlife or feral swine.

20. Can people get brucellosis by eating meat?

There is no danger from eating cooked meat products because the disease-causing bacteria are not normally found in muscle tissue and they are killed by normal cooking temperatures.

21. How common is human brucellosis in this country?

Fortunately, the combination of pasteurization of milk and progress in the eradication of the disease in livestock has resulted in substantially fewer human cases than in the past. Ninety eight cases of human brucellosis were reported in 1997, a fraction of the 6,400 cases reported in 1947. More recently, approximately 100 cases of brucellosis in humans are reported annually to the Centers for Disease Control and Prevention.

22. How can people lessen the risk of brucellosis infection?

Ranchers, farmers, or animal managers should clean and disinfect calving areas and other places likely to become contaminated with infective material. All individuals should wear sturdy rubber or plastic gloves when field dressing and handling tissues from wildlife and feral swine, assisting calving or aborting animals, and scrub well with soap and water afterward. Precautions against drinking raw milk or eating unpasteurized milk byproducts are also important. Ultimately, the best prevention is to eliminate brucellosis from all animals in the area.

For more information regarding brucellosis in humans please visit the Center for Disease Control's (CDC) website at:

[CDC - Home - Brucellosis](#)