COMBINED BRUCELLOSIS FACT SHEET

General Information

1. **What is brucellosis? -** Brucellosis is an infectious disease caused by a bacterium. These bacteria are primarily passed among animals producing disease in many. Various Brucella species affect sheep, goats, cattle, deer, elk, pigs, dogs, and several other animals. Humans become infected by coming in contact with animals or animal products that are contaminated with these bacteria. In humans brucellosis can cause a range of symptoms similar to the flu that may include fever, sweats, headaches, back pains, and physical weakness. Severe infections of the central nervous system or lining of the heart may occur. Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain, and fatigue.

2. **How common is brucellosis? -** Brucellosis is not very common in the United States, where 100 to 200 human cases occur each year. However, since the symptoms are non-specific, additional cases may be recognized or diagnosed. Brucellosis is very common in countries where animal disease control programs have not reduced the amount of disease among animals.

3. **Where is brucellosis usually found? -** Although brucellosis can be found worldwide, it is more common in countries that do not have good standardized and effective public health and domestic animal health programs. Areas currently listed as high risk are Portugal, Spain, Southern France, Italy, Greece, Turkey, North Africa), South and Central America, Eastern Europe, Asia, Africa, the Caribbean, and the Middle East. Unpasteurized cheeses, sometimes called "village cheeses," from these areas may represent a particular risk for tourists.

4. **Is there a way to prevent infection? -** Yes. Do not consume unpasteurized milk, cheese, or ice cream especially while traveling in high risk areas. If you are not sure that the dairy product is pasteurized, don't eat it. Hunters and animal herdsman should use rubber gloves when handling the internal organs of animals. There is no vaccine available for humans.

Department of Agriculture Information

1. **What causes canine brucellosis? -** Canine brucellosis is an illness in dogs that is caused by Brucella canis (B. canis). However, Brucella organisms commonly associated with other animal species, such as Brucella suis (pigs) and Brucella abortus (cattle and bison), can also infect dogs depending upon their exposures to these species.

2. **What are the signs of canine brucellosis in infected dogs?** In female dogs, brucellosis causes abortion and infertility. Females may fail to get pregnant or may lose their litters in late pregnancy (45-55 days). After abortion, females may have a prolonged vaginal discharge. In males, infertility can result from brucellosis affecting various reproductive organs including the prostate, testicles, and epididymis. A brucellosis infection may result in an inflamed prostate, swollen or shrunken testicles, and swollen epididymis. Nonspecific signs that may affect both sexes include lethargy, unwillingness to breed, and inflammation of the lymph nodes. Dogs may not show any signs or symptoms of the disease. Animals may get an infection in the bones or joints and show signs of back pain or arthritis. Infections may also occur in the eye.

3. **How do dogs get infected with Brucella? -** B. canis is a sexually transmitted disease in dogs. Dogs become infected through exposure to secretions during mating or by contact with infected tissues during birth or following abortion. In addition, dogs may spread bacteria in urine, saliva, nasal and ocular secretions, and feces. Infection with B. suis can occur in dogs in contact with feral hogs (e.g. hunting dogs) following exposure to blood, urine, saliva or other tissues. Exposure to B. abortus may occur if dogs have contact with aborted tissues of infected cattle or bison. However, most domestic cattle herds in the U.S. are now free of brucellosis making this route of exposure very unlikely. Brucellosis is still present in cattle in Texas, Wyoming, and Idaho.

4. **Can my dog be cured of brucellosis? -** It is very difficult to cure an infected dog. The bacteria can get into the bloodstream and infect other parts of the dog's body, such as joints and bones. For this reason, dogs infected with brucellosis should either be euthanized or sterilized. Depending upon the type of brucellosis, pet dogs may be spayed or neutered and treated with a long course of antibiotics at the discretion of the pet owner and treating veterinarian. However, relapses may occur resulting in shedding of bacteria. Consequently, treatment is not recommended in any case due to the contagious nature of brucellosis and the threat to human health.

5. **How can I prevent canine brucellosis in my dog? -** The good news is that canine brucellosis is easy to prevent. Before breeding your dog, both the female and male dogs should be examined and tested by a veterinarian. The test involves a simple blood test. Licensed breeding facilities should have all new additions tested for brucellosis before bringing them onto the premises. These animals should also remain isolated until a second negative test is obtained at least 4-6 weeks later. Dogs should not be bred if they are infected with canine brucellosis. Dogs known to be exposed to feral hogs or aborted tissues of infected cattle should be tested periodically to detect any early infection.

6. **What are the signs of canine brucellosis in infected dogs?** In female dogs, brucellosis causes abortion and infertility. Females may fail to get pregnant or may lose their litters in late pregnancy (45-55 days). After abortion, females may have a prolonged vaginal discharge. In males, infertility can result from brucellosis affecting various reproductive organs including the prostate, testicles, and

epididymis. A brucellosis infection may result in an inflamed prostate, swollen or shrunken testicles, and swollen epididymis. Nonspecific signs that may affect both sexes include lethargy, unwillingness to breed, and inflammation of the lymph nodes. Dogs may not show any signs or symptoms of the disease. Animals may get an infection in the bones or joints and show signs of back pain or arthritis. Infections may also occur in the eye.

7. **How is brucellosis diagnosed in my dog? -** Brucellosis is diagnosed in a laboratory by finding Brucella organisms in samples of blood or bone marrow. Also, blood tests can be done to detect the body's immune response against the bacteria. If this method is used, two blood samples should be collected 2 weeks apart to look for a three-fold or larger rise in antibody levels.

8. **Is there a treatment for brucellosis in my dog?** Yes, but treatment can be difficult. Veterinarians can prescribe effective antibiotics. Depending on the timing of treatment and severity of illness, recovery may take a few weeks to several months. Mortality is low.

9. **How can I prevent canine brucellosis in my kennel? -** Breeding dogs should be purchased from known brucellosis-free kennels. All newly acquired dogs should be isolated and tested twice at least 4-6 weeks apart before they are incorporated into the breeding group. All breeding dogs in a facility should be tested yearly at the same time. Dogs bred intensively outside the facility should be tested 2-4 times per year. Females should be tested at least 3 weeks prior to the onset of heat, to allow time for a confirmation test if the screening test is positive. Testing is more accurate near or during heat because there are more bacteria circulating in the bloodstream during these times.

10. **If my dog or kennel is infected, can my other personal pets also get brucellosis? -** The most common method of transmission of brucellosis between animals is during mating. However, there is a low risk of infection between infected dogs as a result of contact with wastes and secretions. Cats seem to be resistant to infection with most strains of Brucella. Transmission between animals (including cats) is more likely if the dog is infected with Brucella suis.

11. **How do I eradicate brucellosis after my home or kennel has become contaminated? -** Brucella organisms are not very hardy outside of a host animal and are sensitive to direct sunlight and desiccation. Contaminated wet areas should be dried and disinfected when possible. Disinfection is effective with any of the following: 1% sodium hypochlorite (bleach), 70% ethanol, iodine/alcohol solutions, glutaraldehyde or formaldehyde.

12. **How do I control and eradicate brucellosis after my kennel is infected? -** Eradication from Licensed Facilities: Quarantine, testing, and euthanasia of infected dogs are the primary methods necessary to eliminate and prevent the spread of disease in a commercial breeding facility. Preventing canine brucellosis is cost effective when compared to being quarantined in order to eradicate an infection.

Department of Health Information

1. **My dog has been diagnosed with brucellosis. Is that a risk for me? -** Brucella canis, which infects dogs, has occasionally been transmitted to humans, but the vast majority of dog infections do not result in human illness. Although veterinarians exposed to blood of infected animals are at risk, pet owners are not considered to be at risk for infection. This is partly because it is unlikely that they will come in contact with blood, semen, or placenta of the dog. The bacteria may be cleared from the animal within a few days of treatment; however re-infection is common and some animal body fluids may be infectious for weeks. Immunocompromised persons (cancer patients, HIV-infected individuals, or transplantation patients) should not handle dogs known to be infected with B. canis.

2. **How is brucellosis transmitted to humans, and who is likely to become infected? -** Humans are generally infected in one of three ways: eating or drinking something that is contaminated with Brucella, breathing in the organism (inhalation), or having the bacteria enter the body through skin wounds. The most common way to be infected is by eating or drinking contaminated 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 made with it. Inhalation of Brucella organisms is not a common route of infection, but it can be a significant hazard for people in certain occupations, such as those working in laboratories where the organism is cultured. Inhalation is often responsible for cases in slaughter-house employees. Contamination of skin wounds may be a problem for persons working in slaughterhouses or meat packing plants or for veterinarians. Hunters may be infected through skin wounds or by accidentally ingesting the bacteria after cleaning deer, elk, moose, or wild pigs that they have killed.

3. **Can brucellosis be spread from person to person? -** Direct person-to-person spread of brucellosis is extremely rare. Mothers who are breast-feeding may transmit the infection to their infants. Sexual transmission has also been reported. For both sexual and breast-feeding exposures, if the infant or person at risk is given preventive treatment for brucellosis, their risk of becoming infected will probably be eliminated within 3 days. Although uncommon, transmission may also occur via contaminated tissue transplantation.

4. **How is brucellosis diagnosed? -** Brucellosis is diagnosed in a laboratory by finding Brucella organisms in samples of blood or bone marrow. Also, blood tests can be done to detect the body's immune response against the bacteria. If this method is used, two blood samples should be collected 2 weeks apart to look for a three-fold or larger rise in antibody levels.

5. **Is there a treatment for brucellosis in humans? -** Antibiotics are used to treat brucellosis in humans. Persons infected with B. canis typically respond well to therapy. Persons infected with other Brucella species may require antibiotic therapy for several weeks to months, with relapses being common.

6. **What are the symptoms of canine brucellosis in humans? -** Depending upon the Brucella species, symptoms are often mild and nonspecific. Most commonly a continued, intermittent, or intermittent fever accompanied by headache, weakness, generalized aching and lymph node enlargement characterizes human infection. In more severe infections, joints, bones, or heart valves may be affected. Individuals exhibiting any of these symptoms should seek medical attention.

7. **How long after exposure would I become ill if I have become infected? -** Signs of illness can occur within one week to several months after exposure. On average, signs will begin within 3-4 weeks following infection.

8. **How do I prevent myself from getting canine brucellosis if my dog is infected? -** Protective measures should be taken to prevent contact with reproductive secretions, urine and tissues (such as an aborted fetus). Make sure latex or rubber gloves are worn when handling high risk materials and cleaning affected surfaces. Face masks and eye protection should be worn to prevent any material from entering the mouth or eyes when disinfecting kennel areas and runs especially if the person is immune compromised. Any infected animal should be placed in quarantine or isolation facilities until the testing is complete. Avoid exposure to stray or feral dogs.

9. **For more information:**
http://www.cdc.gov/nczved/divisions/dfbmd/diseases/brucellosis/

and: http://www.nasphv.org/Documents/BrucellaCanisInHumans.pdf
This fact sheet provides general information. Please contact your physician and/or veterinarian for specific clinical information related to you or your animal.