

Q Fever: A Bacterial Zoonosis

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Received date: December 02, 2021; **Accepted date:** December 16, 2021; **Published date:** December 23, 2021

Citation: Cooper B (2021) Q Fever: A Bacterial Zoonosis. J Zoonotic Dis Public Health. Vol.5 No.S2:002.

Description

Q fever is an infection caused by bacterium *Coxiella burnetii* which is mainly transmitted to humans and other mammals through inhalation of infectious particles. It is an occupational disease in persons working in contact with animals, such as slaughterhouse workers, veterinarians, and farmers. In nature, *C. burnetii* is maintained by a wildlife tick cycle. However, infection caused by tick bites has been declared for several species, including humans. The major sources of *C. burnetii* infections in animals and humans are infectious dust from the tick faeces which is deposited on the skin of the animals and on dried placenta after parturition. Dermacentor, Rhipicephalus, and Amblyomma ticks are probably responsible for the transmission of *C. burnetii* among dogs and wildlife. Ticks, Cattle, sheep, and goats are the primary reservoirs for *C. burnetii* and ingestion of unpasteurized milk or dairy products, and human-to-human transmission are the other modes of transmission of this infection. Infection in domestic and wild carnivores has been reported from various areas of the world. *C. burnetii* has been demonstrated within the blood of cats for up to 1 month and in urine for two months.

The organism is often isolated frequently from the placenta of cattle, sheep, and goats. In several instances, human infections resulted from exposure to parturient carnivores, as high concentrations of the organism are found within the products of conception, fatigue, sweats, and a light non-productive cough. A dog was fed with deer liver, one week later, the dog gave birth to

pups under the bed of one of the family members, one was stillborn and two died within the first week of life. The children, who were present within the room at the time of the puppies' birth, became sick 10 days later. In this outbreak, it had been strongly suspected that the dog was liable for the outbreak. It was seropositive and *C. burnetii* was isolated from the dog's uterus. Similarly, Q fever pneumonia developed altogether three members of 1 family 8-12 days after exposure to an infected parturient dog, which gave birth to four puppies that each one died within 24 hours of birth because of the close contact between dogs and cats and their owners, pets can be considered as sentinel animals for the presence of *C. burnetii* in the household environment.

Based on culture of *C. burnetii*, Q fever is diagnosed, but is rarely performed for safety reasons in the laboratory (inoculation of guinea-pigs, embryonated eggs, tissue cultures). PCR on biological products available only in very specialized laboratories should be considered. Diagnosis is especially supported serology using IFA, ELISA, immune response, or microagglutination. No specific study has been conducted on treatment efficacy in puppies and cats, but it's likely that tetracyclines and chloramphenicol would be effective, as in humans. Farm dogs are prevented from having close contact with sheep, goats, or cattle and farmers having Q fever outbreaks in their flocks or herds should be aware of the risk associated with their pets. Tick prevention and control is additionally important, especially in dogs.