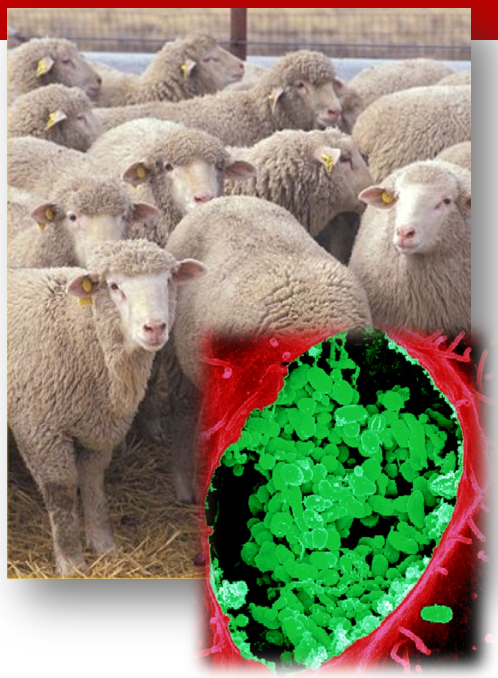
Last update – Feb 2010

Q-FEVER: *Coxiella burnetii*



Agent Characteristics: *C. burnetii* is a pleomorphic Gram negative obligate intracellular bacterium. It may be presented as a vegetative bacillus form or as a spore-like form. Mixtures of both forms are found in phagolysosomes.

Stability: The spore-like structures are highly resistant to heat, desiccation and many common disinfectants. It can persist for months to years in contaminated soils.

Host Range: Cattle, sheep and goats are the primary reservoirs of *C. burnetii* . These animals do not usually present clinical disease, although abortion in goats and sheep has been linked to *C. burnetii* infection. Humans are often very susceptible and domestic and wild mammals as well as birds may be infected. Because of the disease prevalence in small ruminants, all sheep and goats should be assumed to be infected unless their status has been determined by repeated serological testing.

Modes of Transmission: The major route of human infection is the inhalation of aerosol particles from contaminated animal derived materials. Organisms are highly concentrated in the placenta and placental fluids but can also be found in feces, urine, blood, milk and wool from infected animals. Less commonly the oral route has been suggested, particularly through the consumption of dairy products derived from contaminated raw milk. Arthropods, principally ticks, may be involved in Q fever transmission to animals, but seldom to humans. Human-to-human transfer seems extremely rare.

Infection in Humans: Although Q fever is usually asymptomatic or mild in humans, a few people develop serious disease. The most common manifestation is flu-like symptoms which normally are self-limited. Pneumonia and hepatitis may occur in acute cases while chronic infections can result in endocarditis . Mortality is less than 1% and is generally related to endocarditis. Persons at risk (*i.e.* those with valvular heart disease, persons who are immunosuppressed, pregnant women) should be advised of the risk of serious illness that may result from Q fever.

Infectious Dose: Only a single inhaled organism may be sufficient to cause infection in a susceptible host.

Containment Level: Biosafety level 2 practices and containment for nonpropagative laboratory procedures, including serological examinations and staining of impression smears; biosafety level 3 practices and facilities for activities involving the inoculation, incubation, and harvesting of embryonated eggs or tissue cultures.

Surface Disinfection: Susceptible to 70% ethanol, glutaraldehyde and gaseous formaldehyde (humidity control is essential). Susceptibility to sodium hypochlorite, formalin and phenols varies.

Laboratory-acquired infections: Most of these have involved work with pregnant sheep in research laboratories.

Questions?

Contact the Biosafety Office (513-558-6182 & 513-558-5210 or inbiocom@ucmail.uc.edu)

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