ABSTRACT

Q fever, a widespread zoonotic disease caused by Coxiella burnetii, produces a complex and polymorphic disease in humans. As a zoonotic disease, control in animals will influence the level of disease seen in humans, thus resulting in interesting one health perspectives for disease control. Here the authors describe the clinical manifestations in animals and humans, as well as the current diagnostic methods available and the strategies for disease control. A review on the published information regarding Q fever as a disease with impact for veterinary public health and public health is presented.

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RISK FACTORS FOR COXIELLOSIS: 
A ONE HEALTH APPROACH

Awareness of the excretion routes of *C. burnetii* from infected domestic animals is vital to pinpoint transmission routes, and thus, prevent human infection and allow the implementation of effective and reasonable preventive measures. Transmission to humans mainly occurs through inhalation of contaminated aerosols from the environment, such as dust or tick feces (Klemmer et al., 2018), thus making Q fever, essentially, an airborne disease, although some studies refer the evidence that *C. burnetii* may be a food-borne pathogen (Benson, Brock, & Mather, 1963; Cerf & Condon, 2006; Gale, Kelly, Mearns, Duggan, & Snary, 2015) throughout experiments obtained in which contaminated milk was fed to volunteers, causing seroconversion but any clinical disease (Benson et al., 1963) or through the consumption of unpasteurized milk (Gale et al., 2015). Domestic ruminants’ excretion of *C. burnetii* is considered to be the main source of environmental contamination and a key cause of human infection (Roest et al., 2012; van den Brom, van Engelen, Roest, van der Hoek, & Vellema, 2015), as referred. In the Netherlands, after one of the largest Q fever outbreaks, airborne presence of *Coxiella burnetii* showed to be associated with goat kidding season, and with spatial variation/distance/size of goat farms (de Rooij et al., 2016; van der Hoek et al., 2010).

Shedding of *C. burnetii* occurs in feces, milk, and mostly, in placental membranes and birth fluids of aborted mammal fetuses, as well as, in stillbirths and healthy infected neonates (Roest et al., 2012; van den Brom et al., 2015). Subclinically infected animals also shed the organism, but with considerably lower bacterial loads than those observed in animals that underwent abortion (Roest et al., 2012).

During abortion and parturition of infected ruminants, there is a massive excretion of bacteria from birth products. A previous study has found that around $10^9$ bacteria/gram of placenta were excreted during abortions in ruminants (Khalili, Sakhaee, & Babaei, 2012), whereas birthing of healthy neonates, from infected mothers, revealed a lower quantity (Rodolakis, 2009). Infectious biological excretions are desiccated in the environment, aerosolize, thus becoming airborne and available to be inhaled, allowing for transmission and infection. Environmental surroundings, dust in windy days and fomites (inanimate objects, such as gloves, coveralls, rags, etc.), that have been exposed to contaminated materials, may also result in sources for transmission (The Center for Food Security and Public Health [CFSPH], 2017).
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