Q FEVER: Notes about the Disease

The etiologic agent of Q ("query") fever, *Coxiella burnetii*, was originally considered a rickettsial organism but is now classified with the Legionella bacteria. Until recent years, it was considered uncommon in North Carolina, but its incidence seems to be increasing as a hazard of occupations dealing with livestock. Whether this increase in incidence is real or stems from heightened surveillance is as yet unclear.

C. burnetii most commonly infects cattle, sheep, and goats. Pregnancy tends to induce a recrudescence of Q fever, and the greatest risk of human infection occurs when an infected animal gives birth. The ID_{50} (the number of organisms required to infect 50% of an exposed population) is extremely small for *C. burnetii*, and airborne transmission of organisms in dust around premises contaminated with infected animal birth products accounts for most human cases of Q fever. Drinking unpasteurized milk and consuming products made from raw milk can also transmit the disease. Infected animals, including humans, are often asymptomatic, but infected people commonly develop an influenza-like illness that may be accompanied by pneumonia and/or mild hepatitis. Chronic Q fever—most commonly manifest as endocarditis—develops in a small percentage of cases; if untreated, Q fever endocarditis is usually fatal.[1]

In addition to ruminants, dogs, cats, and many other mammalian, avian, and piscine species can become infected with *C. burnetii*. Also, several tick species, including a couple found in NC (lone star and brown dog ticks), can at times be vectors of the disease to animals and humans but, as a mode of human infection, this is not nearly as common a route of transmission as the airborne route noted above.

The *C. burnetii* organism survives quite effectively in the environment and is difficult to eradicate, once contamination occurs. Preventive measures should center on education of those whose occupations place them at risk (e.g., sheep and dairy farmers, abattoir workers, researchers who work with animals) on how to avoid exposure and reduce transmission among livestock (e.g., use of personal protective equipment, separation of parturient animals, proper disinfection and disposal of animal products of conception, etc.). Screening and culling of animals has not been shown to be effective. Of course, pasteurization of milk is important in preventing Q fever and a host of other infections.

Finally, because of its hardiness and ability to be disseminated via aerosolization, *C. burnetii* is a potential agent of bioterrorism.

1. NR Parker, JH Barralet, and AM Bell, "Q Fever," *Lancet* 367 (2006): 679-88.