

Q Fever

It's not a cause for alarm, just caution.

by Troy Smith

If David Van Metre had a dollar for every time he's heard the same rancher rationale ... well, he might not need his job as Colorado State University Extension veterinarian. According to Van Metre, upon learning that certain infectious diseases can be transmitted from livestock to humans, the typical response is, "I've been around animals all my life, so I'm probably immune to it."

"That may be true, but a person's immunity is neither infinite nor permanent," Van Metre states. "It can and does change — with age, for example. A person's immunity is not the same at age 60 as it was at 30."

Van Metre says immunity can vary with overall health status and the amount of stress an individual experiences. Risks of exposure to disease-causing organisms also vary. It's possible for high levels of exposure to a particular pathogen to overwhelm an individual's immune status.

Q fever is an animal disease that can also cause illness in people who tend livestock. Along with veterinarians, animal research personnel and slaughter plant workers, stockmen face occupational exposure to the bacteria, *Coxiella burnetii*, which causes Q fever. Van Metre explains that the name is a shortened version of "query fever." That's what doctors in 1930s Australia called the disease first recognized among slaughterhouse employees.

It's likely plenty of cattle producers have been infected and just didn't know it. Van Metre says most cases of Q fever among humans are asymptomatic. About 60% of humans infected with the organism are completely unaware. Their immune systems respond and quickly fight off the infection.

Of the other 40%, most experience a brief period of flu-like symptoms, including fever, headache, fatigue and muscle aches.

More serious illness, including pneumonia and hepatitis (inflammation of the liver), occurs in 2%-5% of people affected by Q fever. Among people with suppressed immune function — those having autoimmune disorders, patients undergoing

chemotherapy, organ transplant recipients and even pregnant women — this can be a very serious and long-lasting ailment. Q fever puts people with abnormal heart valves or coronary vascular grafts at risk of developing endocarditis, which is an infection of the valves and interior lining of the heart.

Not just from cattle

It's possible for Q fever's causative organism to spread to humans from multiple animal species, including pets and wildlife.

It's a bacterium that can also be spread by ticks. However, the transmission of *Coxiella*

burnetii to humans is most frequently the result of exposure to ruminants at birthing time or their birthing environment.

Cattle, sheep and goats can shed the bacteria in urine, feces and milk, as well as vaginal secretions and uterine fluids.

Shedding of the bacteria can occur through the fluids and membranes

expelled when an infected female gives birth, even when she and her offspring appear normal and healthy. In fact, Van Metre says most animals harboring *Coxiella burnetii* show no signs of disease. When, for unknown reasons, the organism gains the propensity to cause disease in livestock, the most common outcomes are abortion, stillbirth or birth of weak offspring.

Van Metre says most cases of Q fever among humans results from inhaling *Coxiella burnetii* that become aerosolized (airborne) when an infected animal gives birth or experiences a spontaneous abortion. Contact with contaminated soil, bedding or clothing is another potential route of infection. Wind-borne transmission of the organism may also be possible since occasional cases have developed in individuals with no known exposure to livestock. Ingestion of the bacteria may also occur, through unpasteurized milk and milk products. (Pasteurization eliminates the organism.) In cases where humans do develop Q fever, most people experience symptoms within one to three weeks following exposure.

"The peak time of risk to cattle producers is during the calving season. There may also be some risk associated with artificial insemination procedures, but it's probably much lower than during calving. An aborted fetus and placenta can harbor incredibly high numbers of these bacteria, so [an abortion] should always raise a red flag to take extra precautions," states Van Metre.

"When handling the (aborted) fetus or placenta, wearing gloves is critical. I also recommend wearing an 'N95' mask (available at most hardware stores) to limit the chance of inhaling the organism," warns Van Metre. "Collect the fetus and placenta with care, and get them to a veterinarian for diagnosis. I recommend double-bagging the fetus and membranes and transporting them, on ice, in a sealed container. Dispose of any contaminated bedding and disinfect instruments and equipment. Disinfect your boots, and wash your hands and clothing right away. Don't leave those soiled coveralls lying where the dog or cat can nose around in them."

Van Metre also advises isolating the aborting dam away from remaining pregnant females, lactating dams and offspring. Keeping newly purchased animals away from pregnant females is advised until all have calved. Admittedly, prevention of Q fever in animals is difficult. No licensed vaccine is available in the United States. Perhaps the best prevention, says Van Metre, is making sure the herd benefits from solid programs for nutrition and animal health. Awareness of the signs associated with Q fever, in both livestock and humans, is an important precaution, too.

"The risk of exposure, on many cow-calf operations, peaks during calving season. If that's in late winter and spring, it coincides with the peak season for influenza in humans. If a producer or worker does get sick, it could be difficult to differentiate the cause," Van Metre notes.

"I advise people who work with livestock on a regular basis to get a flu shot every fall. Subsequently, should flu-like signs develop, the patient's history of having an annual flu shot simply lessens the diagnostic dilemma for the physician. It is critical that ill ranchers inform their physicians about their occupational risk for certain infectious diseases," Van Metre says.

"Tell the doctor if you've been attending cows as they calved. There are several zoonotic (transmittable from animals to humans) diseases that can cause flu-like symptoms. To help your physician help you, it's extremely important that you disclose your risks clearly."

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