

Cattle and *Campylobacter*—Risk Factors in Rural Environments

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“I thought I was a tough cowboy, but I found out that I wasn’t so tough after all,” one Wyoming cowboy reported during a phone call concerning his recent bout of a gastrointestinal illness called campylobacteriosis. He went on to say that in the middle of July, during 100-degree weather, he was standing outside in the sun wearing his down parka because the chills were so bad that he could not get warm. Of course his friends thought he was crazy. But he was not



Branding a calf in Wyoming.

crazy, he was just experiencing the gut-wrenching consequences of coming into contact with an infectious bacteria known as *Campylobacter*.

Campylobacter infections are most commonly thought of as a foodborne illness associated with undercooked or improperly handled raw poultry. Sporadic cases have also occurred after drinking unpasteurized milk, contact with infected household pets, or travel abroad. Most of the larger outbreaks have occurred as a result of consuming unpasteurized milk and contaminated water.

Campylobacteriosis is the second most commonly reported cause of bacterial gastroenteritis in Wyoming and the most common cause in the United States. As many as two million people, or one percent of the nation’s popula-

tion, get infected every year. Infection with *Campylobacter* often results in bloody diarrhea, abdominal pain, nausea, vomiting, chills, muscle aches, fatigue, and fever. The signs and symptoms of campylobacteriosis typically begin two to five days after exposure to the bacteria but may vary from one to ten days depending on the pathogenicity and number of organisms ingested. Acute symptoms usually last about a week, but may range from several days to several weeks. The illness typically resolves without treatment, although in rare cases arthritis or a type of paralysis called Guillain-Barré Syndrome may result from the infection.

In 2001, the Wyoming Department of Health received reports of 56 confirmed and 2 probable cases of campylobacteriosis among state residents. Determining a definitive source of the infection, especially among sporadic cases, is often difficult if not impossible. Interviews with many of the cases showed exposures to commonly recognized sources of *Campylobacter*. In several cases, consumption of undercooked chicken or unpasteurized milk was reported the week before illness, and several backpackers confessed to drinking untreated stream water within the incubation period. However, during the spring and summer months of 2001, epidemiology personnel noted reports of an unusual source of exposure. Epidemiological surveillance identified a potential association between cattle handling, especially branding-related activities, and infection with *Campylobacter jejuni* in 11 (19 percent) of the 58 total cases that year. Using a standardized foodborne questionnaire, the department ruled out some of the common risk factors of infection, such as drinking untreated water, overseas travel, or eating undercooked poultry.

Ten (91 percent) of the eleven branding-related cases occurred in the months of April, May, or June, which are the months in which most calf-branding activities occur in Wyoming. All eleven individuals had assisted in a branding or other calf-handling activity one to four days prior to onset of illness, and all reported significant contact with manure.

For those unfamiliar with calf-branding, it is a common ranch activity in the western states

during the spring months. Calves are usually born during late winter or early spring months. In April, May, or June, ranchers corral these calves and their mothers. The calves are then temporarily separated from their mothers to be branded, vaccinated, medicated, and castrated, as necessary. It is a common practice for neighbors to help each other in this process, since it is labor intensive. Many hands are needed for the various duties, and contact with manure is unavoidable, no matter which end of the calf you wind up holding.

Field observations may not pass the test of the scientific community but they can be an important tool for initiating and developing theories and hypotheses. We present these observations not as hard and fast proof or as definitive cause and effect scenarios, but as encouragement for those who work in the public health sector in rural environments to consider uncommon sources of common infections.

In eastern Wyoming, a cluster of four out of five men reported severe gastrointestinal illness two days after branding calves. Two of the four were hospitalized, and *Campylobacter jejuni* infection was confirmed. Investigation showed the only common link among the ill men was participation in calf-handling activities. Hamburgers had been served immediately following the branding, and the ground beef had been molded into patties by unwashed hands that were possibly still contaminated from calf-handling. The exact source of the infection could not be determined, but it is possible that calf manure played a role.

In a separate incident, a 63-year-old man became ill one day after assisting with a branding. His illness was later confirmed as campylobacteriosis. He suspected that he became infected when he handled one particular calf with severe scours (calf diarrhea). A substantial amount of manure was projected onto his hands and face and into his mouth. A co-worker who handled the calf at the same time had a large amount of manure splashed on her clothes but not in her mouth. She did not become ill.

In eastern Wyoming, a 30-year-old man with a *Campylobacter jejuni* infection reported attending a branding two days prior to onset of his illness. His job during the process was to hold calves on a table while the branding took place. He reported a lot of contact with calf manure. Again, it is impossible to determine

exactly where he came into contact with the bacteria, but he ate a sandwich with unwashed hands during his break and could possibly have ingested calf manure at that time.

These observations along with others prompted the Wyoming Department of Health to distribute a news release to media outlets throughout the state in late May 2001. The release gave information regarding routes of exposure, signs and symptoms, and duration of campylobacteriosis and encouraged those experiencing gastrointestinal illness to seek medical advice. The news release also advised those working at brandings or other cattle-related events to avoid hand-to-mouth (or glove-to-mouth) activities until their hands could be thoroughly washed with soap and water. These activities included eating, smoking, dipping chew, applying chapstick, or touching the facial area in any way.

Although campylobacteriosis is usually considered to be a foodborne illness, those living in rural states may also see routes of exposure that differ from the norm. When dealing with diseases commonly thought to be primarily foodborne or waterborne, we encourage public health investigators to search for atypical routes of exposure when the common scenarios do not answer questions about a particular illness. Health education also may be needed for people in occupations that have direct contact with animals. The next time you come across an unfortunate cowboy wearing a parka in July and complaining about having "the trots" (diarrhea), keep alternative rural exposures in mind. 🐾

Resources

Altekruse SF, Stern NJ, Fields PI, Swerdlow DL. *Campylobacter jejuni* – An Emerging Foodborne Pathogen. *Emerg Infect Dis* 1999;5(1):28-35.

Campylobacteriosis Resources at the Centers for Disease Control and Prevention. www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm

Mandell GL, Bennett JE, Dolin R. *Campylobacter* and related species. *Principles and Practice of Infectious Diseases*. Churchill Livingstone, 2000.

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