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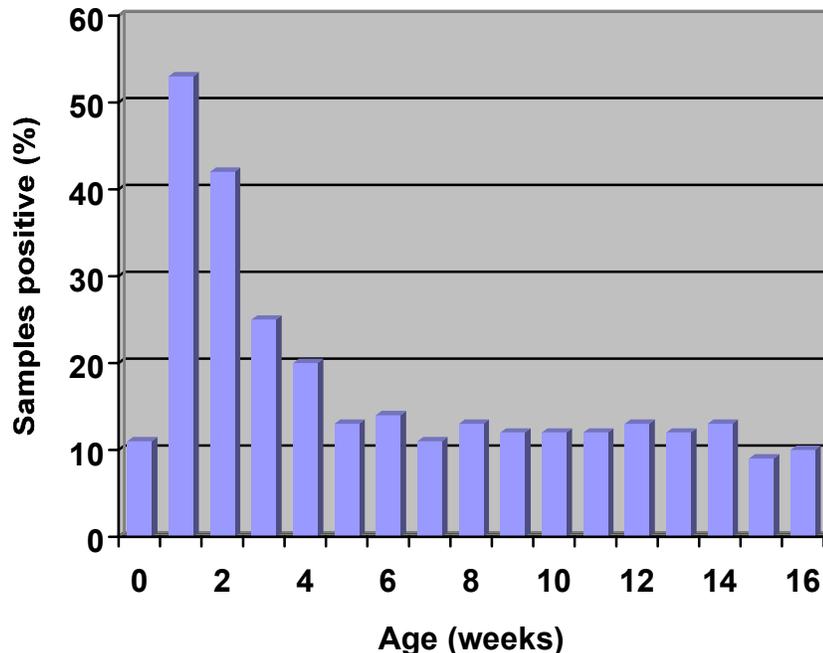
Calf Note #12 – *Cryptosporidium* & *Cryptosporidiosis*

Please Note: The following article is adapted from an article published by Dr. Quigley in [Hoard's Dairyman](#), 1994, volume 139, page 413. Thanks to Mr. Steve Larson and the fine folks at Hoard's for allowing this article to be adapted and reprinted!

The parasite *Cryptosporidium* has been implicated in outbreaks of diarrhea in mammals, including cattle and humans. In March and April of 1993, thousands of residents of the city of Milwaukee became ill during an outbreak of *Cryptosporidium* which was found in the city's water supply. Possible factors associated with the outbreak of *Cryptosporidium* in Milwaukee were:

- Milwaukee uses water from Lake Michigan as its supply. Outbreaks of *Cryptosporidium* are more likely when surface water is used, rather than ground water
- Run-off from possible sources, including dairy farms, wildlife, and human sewage, may have contaminated Lake Michigan as a result of heavy spring rains
- A change of filtration systems in one of Milwaukee's three purification plants was not operating correctly.

Although the actual source of *Cryptosporidium* that caused the outbreak in Milwaukee may never be determined, many people believe that run-off from dairy farms was a primary source of the



parasite. Because *Cryptosporidium* affects both humans and cattle, a study was conducted recently by the National Animal Health Monitoring System (NAHMS) to find out just how widespread the organism is. The National Dairy Heifer Evaluation Project conducted by NAHMS (USDA:APHIS:VS) included 1,811 farms in 28 states which were selected to represent herds of 30

or more cows in those states. These operations represented 78% of all milking cows in the U.S. A total of 7,369 fecal specimens were collected from calves on 1,103 farms to test for the parasite. Results of the evaluation were remarkable. *Cryptosporidium* was found from calves in every state in the survey. On any given day, 22% of calves were positive for *Cryptosporidium*. It was estimated that more than 90% of all farms were infested with the parasite. Other researchers have found similar results. In western Washington, 445 Holstein calves on 10 dairy farms were tested. It was found that 51% of calves from 7 to 21 days of age had *Cryptosporidium* in their feces. In a more recent study at the Dairy Experiment Station in Lewisburg, Tennessee, we found that 96% of Jersey calves shed *Cryptosporidium* during the first 35 days of life. According to NAHMS, the prevalence of *Cryptosporidium* seems to be slightly lower (about 80%) in smaller herds (< 100 cows) compared to larger herds (> 100 cows), where nearly every calf shed *Cryptosporidium*. These data indicate that while some smaller herds are free of *Cryptosporidium*, nearly all large herds will be positive for the parasite. *Cryptosporidium* occurs most often in the very young. As can be seen in figure 1, samples from calves between 2 to 4 weeks of age were most frequently positive for *Cryptosporidium*. Thereafter, the prevalence appears to decline. By 5 or 6 weeks of age, few animals shed oocysts from the parasite.

Cryptosporidium is a coccidia that, like its relative *Eimeria*, lives most of its life inside the animal. The cycle begins when the calf first ingests the oocyst from feces or contaminated feed or water. Upon ingestion, the outer membrane of the oocyst is digested, releasing individual sporozoites. The sporozoites penetrate the cells of the intestinal wall and grow through several stages of development, including meronts (asexual stage) and microgamont and microgametocyte (sexual stage). Ultimately, a fertilized zygote is formed, which develops into an oocyst. The oocyst may be excreted in the feces or can rupture, leading to a renewed cycle of infection. Unlike other coccidia, *Cryptosporidium* is infective immediately, so breaking the life cycle by removing feces is difficult. Here are some tips to help you to keep *Cryptosporidium* under control in your herd:

Cryptosporidium can infect humans, and cases have been reported world-wide. The most common route of infection is through contact with infected animals or feces. Humans of all ages can be affected by *Cryptosporidium*, although the disease is more common in children. Individuals with diseases of the immune system are especially susceptible to *Cryptosporidium*. To minimize your risk, you should be fastidious in cleaning up after handling animals, particularly when handling calves with scours. Proper hand washing and sanitary disposal of calf feces can minimize the spread of the organism.

Currently, there are no approved drugs to control *Cryptosporidium*. Therefore, your best control is strict hygiene. Research has determined that housing calves in clean hutches can reduce the prevalence of *Cryptosporidium* compared to housing calves in a calf barn, particularly if the barn has housed calves previously. Also, a clean calving environment can help minimize the possibility that calves will be exposed to *Cryptosporidium*.

Cryptosporidium is resistant to many disinfectants (including chlorine) and the oocyst is fairly resistant to drying and freezing. The oocyst is small, so it may pass through filters (such as in municipal water systems) and reach water supplies. Therefore, it is important to limit the migration of oocysts through the environment by isolating calf facilities, cleaning hutches or barns regularly and properly disposing of manure. Be very sure that you have no run-off from calf or manure storage facilities into bodies of water.

Calves with cryptosporidiosis will develop diarrhea usually from 7 to 21 days of age. Treatment is supportive - keep animals warm, dry, and provide fluids (electrolytes) if the animal becomes dehydrated. Calves that are otherwise healthy should recover spontaneously in 5 to 10 days. Use of antibiotics to treat cryptosporidiosis is generally not effective.

Your objective when feeding electrolytes is to keep the calf hydrated. It is usually best to feed electrolytes in addition to milk or milk replacer to provide the additional water and minerals the animal needs. We generally feed scouring calves an additional 2 liters of electrolytes at about noon in addition to normal feedings of milk replacer in the morning and afternoon.

In some cases, *Cryptosporidium* will be associated with other bacterial or viral pathogens that occur in calves at the same age as *Cryptosporidium*. Generally, these infections will be more severe than in cases of cryptosporidiosis alone.

Most dairy producers will have to face *Cryptosporidium* at some time. Although there are no sure cures to eradicate the parasite, proper hygiene and housing can go a long way to keeping infections of *Cryptosporidium* manageable.

Written by Dr. Jim Quigley (7 May 1997).
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