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# Managing Cryptosporidiosis: An Update

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Two species of cryptosporidia are of concern in bovine medicine, *Cryptosporidium muris* and *C. parvum*. Of the two, *Cryptosporidium muris* is the more recently discovered and causes an infection of the abomasum in the bovine rather than of the intestine. Dr. Bruce Anderson, a pathologist with the University of Idaho's Caine Teaching Center, first detected this agent in cattle and is responsible for most of the research on this new agent. In a national survey (Anderson, 1991), it was found that approximately 68% of dairies and 80% of feedlots had cattle that were shedding *C. muris* but within herd prevalence was low (1.74%). On four California dairy farms, cattle shedding oocysts of this agent had a 7 lb. per day lower milk production than cattle in the same herds that were not (Esteban and Anderson, 1995). *Cryptosporidium muris* oocysts are approximately twice as large as *C. parvum* oocysts. Not much further is known about this protozoal parasite but more research is under way.

Cryptosporidiosis, caused by *Cryptosporidium parvum*, is primarily an acute diarrheal disease of young calves. It infects a wide range of species, including humans. Several recent reviews addressing control of this infection are those by Harp (1997), Hunt (1996) and Rings and Rings (1996). It can be transmitted by water, which resulted in the outbreak affecting 400,000 people in Milwaukee, Wisconsin, that was blamed on the dairy industry. Cryptosporidiosis is a serious intestinal infection of immunocompromised humans, such as those infected by the HIV virus or those undergoing chemotherapy.

## Ten things to remember when dealing with cryptosporidiosis:

1. Crypto is the most widespread diarrheal agent of calves, being present in virtually every herd.

Much like other coccidia, this is an infection that all calves must acquire an active immunity against at some point in their lives. The key to minimizing clinical disease at this first exposure of susceptible calves is to minimize the initial dose and to maximize host resistance prior to exposure.

Virtually every calf will shed crypto oocysts within the first 30 days of life. Clinically affected calves shed far more than subclinically affected and will heavily contaminate the environment.

2. Isolating calves via hutches has been shown to reduce the incidence of clinical disease.
3. Crypto can be transmitted by aerosols, such as from flush systems or pressure sprayers.
4. Crypto is shed in low numbers by some adult cows in virtually every herd.

For this reason, both beef and dairy cows should be calved out in an area or pen used only for maternity purposes and not on winter feeding grounds in the case of beef cows, or in the dry pen, in the case of dairy cows.

5. Crypto oocysts are extremely resistant to disinfectants but are killed by complete freezing or complete desiccation.

6. The levels of lasalocid that some recommend to treat this infection are toxic to most calves and particularly to those calves less than 7 days of age. The young calves need protection the most.
7. A regimen of daily doses of 100 mg of paromomycin per kg of body weight for 11 days is effective but expensive (Fayer and Ellis, 1993).

Paromomycin is sold in 250 mg capsules under the trade name "Humatin" by Parke-Davis as a human amebicide. Local out of the pharmacy price is \$285.95 for a 100 count bottle of 250 mg capsules.

Paromomycin is also sold as a sulfate powder, product number P 9297, by Sigma, (800) 325-3010 or <<http://www.sigma.sial.com>>. Current price of 25 grams is \$166.65. They may not be able to sell to private individuals and this is very likely a technical rather than a pharmaceutical grade product.

8. The **best** and most often overlooked way to maximize calf resistance is to feed the Holstein calf **4 quarts** of high quality first milking colostrum within the first six hours of life.

Select colostrum that looks like colostrum.

Feed 4 quarts. As demonstrated by a number of reports, 2 quarts are not enough.

Maximize antibody concentration by selecting colostrum from cows that were not leakers and produced less than 20 lbs. (10 quarts). The antibody concentration in colostrum from cows that produce a larger volume may be too dilute to provide an adequate mass of antibody (a minimum of 100 grams) to the calf within the 4 quart volume.

Use a sanitized esophageal feeder. Most calves will not suckle enough to be bottle fed.

Disease can be further reduced by feeding the balance of well-managed colostrum during the first week or so of life.

9. In the face of a cryptosporidiosis outbreak, minimize exposure dose and check the adequacy of passive transfer.

Use a refractometer to run serum proteins on 15 or so of those calves less than 2 weeks of age. In the absence of dehydration, calves with adequate passive antibody transfer should have a serum protein of > 5 mg / dl.

10. This is a zoonotic disease, particularly for the young and the immunocompromised.

## References

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