

CRYPTOSPORIDIOSIS: Notes about the Disease

Cryptosporidium parvum, the very small protozoan etiologic agent of the zoonotic disease cryptosporidiosis, is encountered worldwide. Strangely, it was not recognized as a human pathogen until 1976. In humans with intact immune systems, it usually causes only a mild diarrheal illness, but also produces many asymptomatic infections. In the immunocompromised, however (e.g., AIDS patients), it can induce quite serious, chronic, and even fatal infections.

While most human infections are sporadic and result from direct transmission from another human via the fecal-oral route (another one of those day care center bugs!), a variety of wild and domestic animals can harbor *C. parvum*. It is a significant cause of scours (diarrhea) in newborn calves, leading a North Carolina State University School of Veterinary Medicine scientist to develop a vaccine to prevent cryptosporidiosis in cattle in 1999.¹

Where this organism really thrives, though, is via contaminated recreational or drinking water. Its innate resistance to chlorination, ability to survive in moist environmental settings, and low infectious dose ($ID_{50} \approx 100$ organisms) render *C. parvum* capable of causing large waterborne outbreaks; in 1993, over 400,000 cases of cryptosporidiosis resulted from contamination of the Milwaukee, Wisconsin, public water supply. The majority of surface waters that are untreated with adequate filtration are contaminated with *C. parvum*, leading the Environmental Protection Agency to include 99% removal of this organism in all systems as part of the National Primary Drinking Water Standards.²

Thus, the public health importance of cryptosporidiosis can be quite significant on a large scale if our drinking water supplies are not properly protected (source protection from animal waste and adequate filtration). Many of NC's public drinking water systems utilize surface water, and shallow wells are not always safe either. Foreign travelers to developing countries should take precautions with both raw food and drink. For the immunocompromised individual, great care must be taken to avoid this parasite, and questionable water may need to be boiled for at least one minute or put through a special water filter rated for cyst removal. As with all fecal-oral agents, the importance of good personal hygiene cannot be overemphasized.

1. "New Vaccine for Bovine Diarrhea Could Help Humans," *NC State University Press Release*, 4 May 1999, www.ncsu.edu/ncsu/univ_relations/news_services/press_releases/99_05/159.htm.
2. "EPA National Primary Drinking Water Standards," *EPA*, June 2003, www.epa.gov/safewater/consumer/pdf/mcl.pdf.