



Raw Milk Contains Cryptosporidium? *NO WAY!*





About Cryptosporidium

Historical perspective – U.S. 2009-2017 *

- 444 outbreaks, 7465 cases, 40 states
- Confirmed modes of transmission:
 - Treated recreational water (35%)
 - Contact with cattle, 65 outbreaks, (14.6%)
 - Childcare (13%)
 - Foodborne, 22 outbreaks (4.9%)
 - Raw milk, 9 outbreaks (40.9 % of food-related)
 - Unpasteurized apple cider 4 outbreaks (18.2%)
 - Other food sources (40.9%)





About Cryptosporidium

- Routes of infection in humans
 - Swallowing contaminated surface water
 - Swimming
 - hiking
 - Contact with animals (calves, goats)
 - Consuming contaminated raw foods
 - Other exposures farms, petting zoos



Cryptosporidium in Food

- Sources: contaminated water, fecal contaminated surfaces, contact with infected persons or animals
- Potential routes of contamination in food
 - Fecal contamination
 - Contaminated irrigation water or runoff
 - Presence of animals on property
 - Unsanitary processing environment
 - Cross-contamination via plant workers





Outbreak Investigation

- Initial cases: source - ?
- Preliminary investigation
- Active surveillance
- Field investigation





Hypothesis

- Environmental contamination (untreated well water)
- Discussion with CDC CryptoNET Laboratory
 - Contaminated equipment possible
 - Sampling process water reasonable
 - State Veterinarian: calves' health
 - NO collection of raw milk at plant



Farm Visit

- Field flooded around well
- Collection of municipal H₂O only
- Cross-connection observed
- C. parvum ABSENT in H₂O sample
- State Veterinarian: herd health good



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Where are we now?

- Unable to obtain raw milk samples from cases
- Active surveillance by EPI (SC DHEC – DADE)
- No definitive link without product to test



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Lessons Learned

- Pack your patience
- Surface sampling method needed
- Specialized sampling equipment and technique required



References

- “Cryptosporidiosis Outbreaks — United States, 2009–2017”
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<https://www.nejm.org/doi/full/10.1056/NEJM200210173471622>
- “Efficacy of Two Peroxygen-Based Disinfectants for Inactivation of *Cryptosporidium parvum* Oocysts”
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1087572/>
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<https://pubmed.ncbi.nlm.nih.gov/10228259/>



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Questions?





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