A cluster of cryptosporidiosis cases due to unpasteurized milk consumption – Maine, 2014

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Cryptosporidiosis

- Parasite
- *C. hominis* – human-to-human, often water exposure
- *C. parvum* – animal contact or animal-contaminated food and water
- Few studies showing association with raw milk
Cryptosporidiosis in Maine and US, 2009-2015*

Rate per 100,000 persons

Year

Maine
US

2009 2010 2011 2012 2013 2014 2015*

*preliminary as of 11/9/15 for Maine, 10/31/15 for US

Maine Center for Disease Control and Prevention
Cryptosporidium species detected in Maine, 2009-2015*

*preliminary as of 11/9/15
Unpasteurized milk in Maine

• Legal to sell in state of Maine
  – In any retail setting
  – Labeled as “not pasteurized”
  – Can not be served in restaurants, institutions, anywhere licensed by DHHS
• Must be licensed and tested
• 4 samples every 6 months (at milk lab)

Maine Center for Disease Control and Prevention
Two cases of cryptosporidiosis reported from commercial lab
EIA positive and confirmed via microscopy
Reside two adjacent rural counties
Common exposures upon interview

- Consumed unpasteurized milk from Farm A
- Contacted raw milk work group (Department of Agriculture, Conservation, and Forestry (DACF) and University of Maine Cooperative Extension)
Onset of illness

Two cases reported

Maine Center for Disease Control and Prevention
Two more cases reported
Both consumed raw milk, Farms A and B
One had friend also ill with no health insurance
  – Arranged for testing
  – Consumed raw milk from Farm A
Onset of illness

Maine Center for Disease Control and Prevention
Four cases

- Ages range 27-69 years
- 3 (75%) female, one pregnant (9 months)
- 2 rural counties
- No hospitalizations
- 4 different households
- 3 cases confirmed via PCR in Maine
  - Confirmed at CDC as *C. parvum* IIaA15G2R1
Common milk exposure

- Milk purchased on January 14\textsuperscript{th} and 21\textsuperscript{st}
- Milk purchased at three different retail stores and a farm share
  - Farm A distributes $\sim$200 gallons/week to multiple retail stores along the coast
Case definition

• **Confirmed**: An individual with diarrhea, laboratory confirmed stool specimen for cryptosporidiosis and consumption of unpasteurized milk from Farm A between January 1, 2014 – February 20, 2014

• **Probable**: An individual with diarrhea and either 1) linked to a confirmed case or 2) consumption of unpasteurized milk from Farm A between January 1, 2014 – February 20, 2014
Additional case finding

• Continued passive surveillance
  – No other cases with unpasteurized milk consumption from Farm A identified
• Enhanced communication with local health care providers
• Notified New Brunswick Canada as cases occurred in neighboring counties
Farm A inspection, February 10th

• Samples collected:
  – Calf feces
  – Milk parlor
  – Milk filters
  – Milk sample
Laboratory testing - environmental

• Maine: PCR positive
  – Calf feces (2/3)
  – Milk room (3/3)

• CDC:
  – Calf feces: *C. parvum* IIaA15G2R1
  – Milk room: *C. parvum* IIaA15G2R1
Farm visit - likely exposure

- Farmer admitted to bringing calves into milk parlor on cold nights in January
Farm visit

- 15 recommendations provided
  - Limit traffic in milk parlor
  - Thoroughly hose off boots
  - Cleaner milking parlor (reduce clutter, clean manure between cows)
  - Isolate sick calves (not in milking parlor), feed last, improve sanitation among calves
  - Improving milking process
  - Improving bottling procedure
Limitations

• Unknown numbers who purchased milk, unable to calculate attack rate
• Difficulty obtaining information about unpasteurized milk consumption
• Some patient specimens put in formalin; requested additional specimens
• Difficulty testing the milk specimens
• No milk from the batch causing illness available for testing
Conclusions

- *C. parvum* IIaA15G2R1 is common amongst dairy calves
- Quick response using raw milk investigation protocol
- Molecular testing available at CDC allowed environmental and patient specimens to be linked
- Guidance created for unpasteurized milk dealers available online (checklist format)
- Need for more public awareness of risks of raw milk
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Farm A
Questions?

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Unpasteurized milk guidance:
http://extension.umaine.edu/publications/1030e/