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## Campylobacter Outbreak Associated with Consumption of Raw Milk, May–June 2011

### Background

*Campylobacter* infections are reportable in Alaska and the Alaska State Public Health Laboratory (ASPHL) performs subtyping of all *Campylobacter* isolates received (approximately 60–100 reports annually). On June 15, 2011, the Alaska Section of Epidemiology (SOE) was notified by ASPHL of four *Campylobacter jejuni* isolates with identical pulsed-field gel electrophoresis (PFGE) patterns. This unique PFGE pattern had not previously been identified in Alaska in 2011. The four persons had already been interviewed about a wide-range of exposures; consumption of unpasteurized (“raw”) milk was the only exposure common to all ill persons.

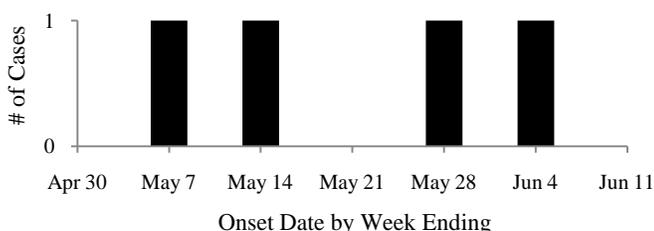
Alaska state regulations do not permit the sale of raw milk; however, owning shares of an animal to receive that animal’s milk is permissible.<sup>1,2</sup> Unlike milk supplied by commercial outlets, there is no testing or pasteurization required of milk before distribution from a cow-share program.

*Campylobacter* infection usually causes acute gastroenteritis 2–5 days after exposure. Illness typically lasts about a week; however, more severe symptoms (e.g., septicemia) can occur. Long-term sequelae, such as arthritis, can also occur. Rarely, Guillain-Barré syndrome (a paralytic autoimmune disorder) develops several weeks after the onset of diarrhea. Person-to-person transmission is not common although can occur if the infected person is producing a large volume of diarrhea.

### Investigation

All four persons with matching *Campylobacter* isolates experienced acute gastroenteritis in May and June 2011 (Figure). Patient ages ranged from 1–81 years. All four persons were living in Southcentral Alaska at the time of their illness, and all reported consuming raw milk from the same cow-share farm (Farm A) in the Matanuska-Susitna Valley. Two of the patients reported that family members (n=3) also experienced acute gastrointestinal symptoms around the same time; however, no medical care was sought. All three of these family members reportedly also consumed Farm A raw milk.

**Figure. PFGE-Matched *Campylobacter* Infection Cases by Onset Date — Southcentral AK, May–Jun 2011**



The Farm A owner reported that approximately one-third of the total 1,100 shares in the cow-share program are “active” at any given time. If we assume that 400 share-holders receive milk each week, and we (generously) assume that 10 unique people in each household drink some of that milk, we would have an average of 4,000 consumers each week. This means that at most 0.6% of Alaskans consume raw milk from Farm A in a given week. Using the binomial distribution, the probability of finding 4 out of 4 Alaskans chosen at random to be Farm A raw milk consumers is  $\sim 0.0000000013$ .<sup>3</sup>

### Environmental Investigation

In May, the Alaska Department of Environmental Conservation’s Division of Environmental Health (DEH) Dairy Program visited Farm A to evaluate the sanitary conditions and obtain a bulk tank milk sample for testing. The sample was negative for *Campylobacter*, but positive for

*Listeria monocytogenes*, a foodborne pathogen that can cause life-threatening infection in newborns and adults. Therefore, DEH developed a listeriosis fact sheet, which the Farm A owner distributed to share-holders on June 1.

The Farm A owner distributed a Health Advisory to shareholders on June 21. Created by SOE and DEH, the advisory notified share-holders about the outbreak and potential consequences of infection, and asked persons who experienced acute gastroenteritis during May/June to report their illness to SOE. On June 22, SOE and DEH staff again visited the farm to collect additional milk and environmental samples for testing; the laboratory results are pending.

### Discussion

This outbreak of *Campylobacter jejuni* infection was associated with consumption of Farm A raw milk. With the onset dates for the four confirmed cases scattered over almost a month-long period, it is unlikely that there was a single “bad batch” of milk, but rather multiple batches of contaminated milk. Raw milk outbreaks can be intermittent and protracted, and this outbreak might well be ongoing. Therefore, we strongly encourage health care providers and the general public to report to SOE all cases of acute gastroenteritis following consumption of raw milk. By interviewing ill persons, we are able to better understand the factors associated with this outbreak and thereby provide more specific control measures to prevent future illness from occurring.

Milk is a rich nutrient broth ideal for proliferation of bacterial pathogens introduced through fecal contamination of product. The coincidental finding of *Listeria* in Farm A milk samples is a sobering reminder of the wide range of infectious diseases that have been caused by consumption of unpasteurized milk, including brucellosis, cryptosporidiosis, hemorrhagic escherichiosis, listeriosis, salmonellosis, and yersiniosis.

### Recommendations

1. Health care providers seeing patients with acute gastrointestinal illness who report consuming raw milk prior to illness should collect stool specimens for bacterial culture and submit samples to ASPHL for free testing; specimen collection guidelines are available at: <http://www.hss.state.ak.us/dph/labs/publications/image/Lab Svcs Manual.pdf>
2. *Campylobacter* infection is reportable to public health by health care providers and laboratories (7 AAC 27.005). Please call 907-269-8000 to reach SOE staff Mon–Fri 8AM to 5PM. Confidential messages can be left at 907-561-1324 or 800-478-1700 if outside Anchorage.
3. Anyone who drank raw milk and then experienced acute gastrointestinal symptoms since March should contact SOE (see #2 above) to assist with the investigation and help prevent illness from occurring in others.
4. Health care providers should educate their patients about the potential serious health outcomes that can result from consumption of raw milk. Educational materials are available on-line.<sup>2,4</sup>

### References

1. Alaska DEH Fact Sheet on Dairy Shares, available at: <http://www.dec.state.ak.us/eh/docs/vet/Fact%20Sheet%20Legal%20bounds%20of%20Cow.%20Goat%20or%20Sheep%20Shares%20in%20Alaska.PDF>
2. Alaska Section of Epidemiology *Bulletin*. Unpasteurized or “Raw Milk” – Health and Legal Issues. No. 29, October 27, 2009. Available at : [http://www.epi.alaska.gov/bulletins/docs/b2009\\_29.pdf](http://www.epi.alaska.gov/bulletins/docs/b2009_29.pdf)
3. Oregon ACD Model to Estimate Binomial Probabilities. Available at: <http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/Pages/keene.aspx>
4. Real Raw Milk Facts, available at: <http://www.realrawmilkfacts.com/>