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Bulletin No. 12 May 1, 2013

Raw Milk *Campylobacter* Outbreak — Kenai Peninsula, Jan–Feb 2013

Background

Campylobacter bacteria cause acute gastroenteritis, typically 2–5 days after exposure to contaminated food or water. Illness is usually self-limited; however, more severe presentations can occur, as can post-infectious sequelae such as reactive arthritis and Guillain-Barré syndrome.¹

On February 13, 2013, Alaska State Public Health Laboratory (ASPHL) notified the Alaska Section of Epidemiology (SOE) of a cluster of four *C. coli* isolates with an indistinguishable pulsed-field gel electrophoresis (PFGE) pattern that was new to Alaska. All four isolates were grown from stool specimens collected in late January from ill Kenai Peninsula residents.

Epidemiologic Investigation

Patient interviews and other investigative work indicated that all four of the ill persons with PFGE-matching *C. coli* strains reported consuming raw (unpasteurized) milk within a few days of their illness onset. These initial interviews also led to additional case finding, primarily by way of ill persons reporting others they knew who were also ill with similar symptoms. While some of the persons who were initially identified during this investigation were reluctant to say where their raw milk came from, four individuals reported that it came from Farm A, a cow-share farm on the Kenai Peninsula.

A confirmed case was defined as a laboratory-confirmed, PFGE-matched, *C. coli* infection diagnosed from January 1, 2013 onward. A clinical case was defined as an acute GI illness with self-reported diarrhea lasting ≥ 2 days in a person with exposure to Farm A raw milk within 10 days of illness onset. A secondary case was defined as an acute GI illness lasting ≥ 2 days in a person with close contact to a confirmed or clinical case within 10 days of illness onset.

On February 14, SOE notified the Office of the State Veterinarian (OSV) of the outbreak, and a joint press release and health advisory were issued on February 15.² OSV immediately notified Farm A of the outbreak and requested a list of all active shareholders. Despite notification of the outbreak, Farm A continued to distribute raw milk to shareholders living in the Kenai Peninsula and in Anchorage.

During the week of February 18, two additional confirmed cases were reported—one of which was in a school-aged child who was hospitalized for 4 days with fevers, abdominal pain, rash, and acute reactive arthritis involving the wrists, ankles, knees, and hips. On February 22, an updated health advisory describing new developments in the outbreak was issued.³ On February 22, Farm A provided SOE with an incomplete shareholder list, which lacked contact information for the majority of shareholders. Calls were made to notify persons on the list about the outbreak and to identify additional cases.

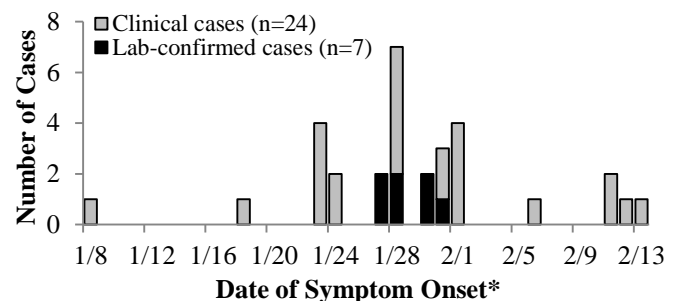
In total, 31 cases were identified during the investigation (Figure). Ill persons ranged in age from 7 months to 72 years (median: 10 years). Three children and one adult developed reactive arthritis lasting a minimum of 6 weeks. Two persons were hospitalized. All ill persons were Kenai Peninsula residents who either personally consumed Farm A raw milk within 10 days of illness onset ($n=29$) or met the secondary case definition ($n=2$).

Environmental Investigation

On February 22, OSV and SOE toured Farm A and collected cow feces, milk, and other environmental samples. Steps where the milk could be contaminated (from collection to bottling) were reviewed with the farmer, and the inherent risk of bacterial contamination of unpasteurized milk was

discussed. The outbreak strain of *C. coli* was not isolated from the samples collected at the farm that day; however, three different strains of *C. jejuni* were isolated from cow manure, and *Listeria monocytogenes* grew from a raw milk sample.

Figure. Cases of *Campylobacter coli* Infection by Date of Onset — Kenai Peninsula, 2013 (N=31)



*One onset date was unclear and was approximated to have occurred on 1/31.

Discussion

This large outbreak of *C. coli* infection on the Kenai Peninsula was caused by consumption of Farm A raw milk. While this outbreak appears to be over, additional campylobacteriosis cases could still be identified at any time as *Campylobacter* species were identified from Farm A manure during the environmental investigation. Furthermore, this is the second outbreak of campylobacteriosis associated with consumption of raw milk distributed by an Alaskan cow-share operation in the past 2 years.⁴ These outbreaks are an unfortunate reminder of the inherent risks associated with raw milk consumption, and underscore the importance of pasteurization.

It is not surprising that the *C. coli* outbreak strain was not isolated from the environmental samples, as *Campylobacter* bacteria are difficult to isolate from the environment, they are shed intermittently in cow manure, and the farm visit occurred weeks after the outbreak peaked. Incidentally, *L. monocytogenes*—a bacteria that can cause life-threatening meningitis—was isolated from Farm A milk; no listeriosis cases were reported during the outbreak.

Finally, four (13%) ill persons developed reactive arthritis, a painful form of inflammatory arthritis that sometimes occurs in reaction to a bacterial infection and can persist for up to 12 months. These cases underscore the fact that *Campylobacter* infection can lead to prolonged adverse health consequences.

Recommendations

1. Health care providers should educate families about the risks of consuming raw dairy products. Informational materials are available at <http://www.realrawmilkfacts.com/>
2. Providers should obtain stool cultures in patients with acute GI illness and history of raw dairy consumption.
3. Providers should promptly report cases of *Campylobacter* infections to SOE by calling (907) 269-8000.
4. Cow/goat-share operators should maintain current and legible shareholder/distribution records and share these records promptly with health officials if an outbreak is suspected to be linked to their farm. For more info, see: <http://www.dec.state.ak.us/eh/docs/vet/Dairy/RawMilkSharesFactsheet.PDF>

References

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