
Interim Report: Multijurisdictional Outbreak of *Salmonella* Typhimurium Infections Linked to Raw Milk, October 2023–January 2024

January 4, 2024

SUMMARY

From October 2023 through January 4, 2024, the California Department of Public Health (CDPH), in collaboration with California local health jurisdictions (LHJs), the California Department of Food and Agriculture (CDFA), and state and federal public health partners, has been investigating a multijurisdictional outbreak of *Salmonella* Typhimurium. Epidemiologic, laboratory, and traceback investigations have identified Raw Farm brand raw (unpasteurized) milk as the source of the outbreak. As of January 4, 2024, 151 outbreak-associated cases have been reported. The investigation is ongoing.

BACKGROUND

On October 18, 2023, the [REDACTED] notified the CDPH of eight salmonellosis cases in persons reporting consumption of raw milk from Raw Farm, LLC of Fresno County, California. CDPH, in collaboration with LHJs and CDFA initiated an investigation to confirm and mitigate the source of infections.

METHODS

For the purposes of this investigation, a confirmed case is defined as laboratory-confirmed infection of *S. Typhimurium* with allele code SALM1.0 - 6745.4.2.1x that is highly related based on whole-genome sequencing (WGS) in a person with symptom onset since September 15, 2023. A probable case is defined as laboratory-confirmed *Salmonella* infection with isolate pending WGS in a person who reported consumption of Raw Farm raw milk and symptom onset since September 15, 2023.

Epidemiologic and food exposure data were collected using the CDPH, [REDACTED] and [REDACTED] standardized salmonellosis case report forms. All patients who met the confirmed case definition, regardless of raw milk exposure, and all patients meeting the probable case definition were also interviewed with a raw dairy supplemental questionnaire to ascertain the brand, purchase location, whether they had any leftover product, and other details of any raw dairy exposures prior to illness onset. To date, 64 patients (57 confirmed and 7 probable) have been interviewed with the raw dairy supplemental questionnaire. All probable cases and confirmed cases who reported “maybe” or “don’t know” to consuming raw milk were excluded from the supplemental questionnaire data analysis to better compare with the FoodNet CA population survey data. Beginning October 19, 2023, the CDPH, CDFA, and LHJs collected Raw Farm product samples (raw milk, cream, kefir and cheese) from the Raw Farm dairy, retail stores, and patients’ homes. Samples were tested for *Salmonella* and underwent WGS if positive.

RESULTS

As of January 4, 2024, 151 cases (138 confirmed and 13 probable) have been reported from three states: CA (149), NM (1), WA (1). The California cases were from 34 local health jurisdictions throughout California: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. Illness onset dates ranged from September 21 through November 13, 2023 (Figure 1). Specimen collection dates ranged from September 23 through December 4, 2023. The median age of patients was 7 years (range, <1 - 85 years); 65% were male. Eighteen (14%) of 131 patients were known to require hospitalization; no deaths were reported.

Seventy-two percent (91/127) of patients reported consuming raw milk in the initial and/or supplemental questionnaire. Eighty-five percent (46/54) of California patients

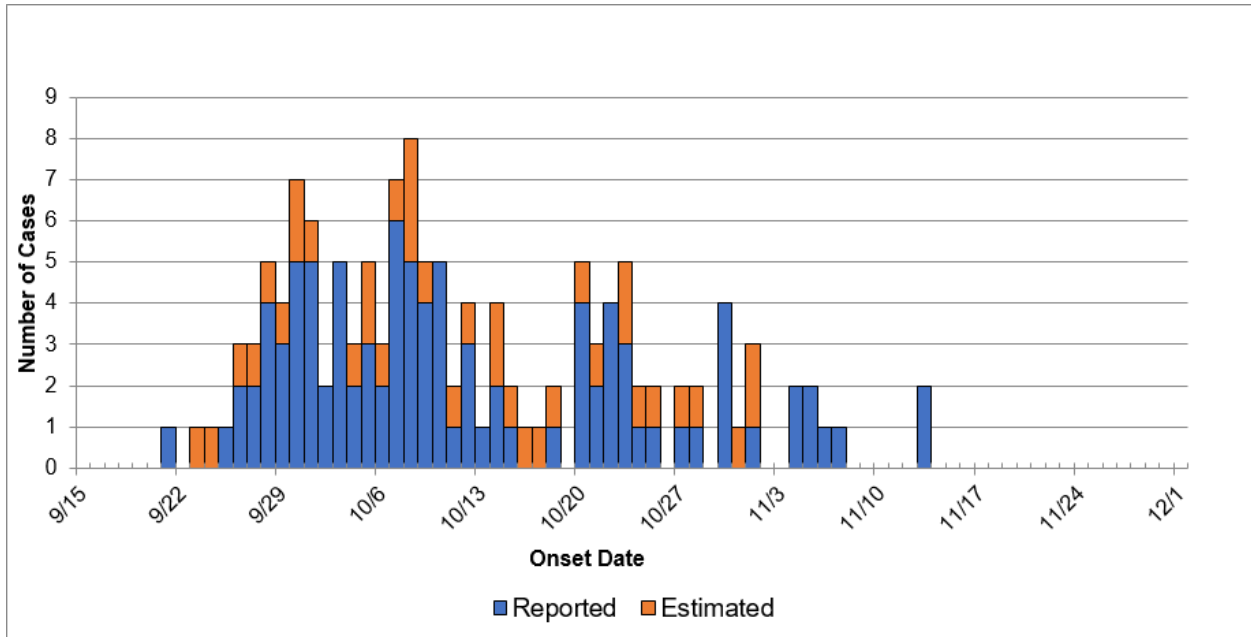
interviewed with the supplemental questionnaire reported consuming raw milk. Of those who consumed raw milk and recalled brand information, 93% (41/44) consumed Raw Farm brand raw milk. The proportion of confirmed patients who reported raw milk consumption during the week prior to illness is significantly higher (binomial p-value < 0.001) than expected by chance alone, compared to the estimated 1.9% background rate of raw milk consumption during the prior week based on 2018-19 FoodNet CA population survey estimates. All five patients who reported consuming or likely consumed other types of raw dairy products (including various cheeses, cream and butter) also confirmed drinking Raw Farm raw milk. Of the two non-California residents, the [REDACTED] patient was lost to follow up. The [REDACTED] patient reported purchasing Raw Farm raw milk and cheese in [REDACTED] but declined to provide further details.

A sample of raw milk collected by CDFA at the Raw Farm dairy in Fresno, CA on October 19, 2023, was found to be positive for *S. Typhimurium* matching the outbreak strain. Another sample from the Raw Farm dairy collected by CDFA on October 25, 2023, was also positive for the outbreak strain of *S. Typhimurium*. One retail sample of raw milk in a 64 oz. container with a best by date of 10/27/2023 tested positive for the outbreak strain of *S. Typhimurium*. The remaining samples from retail stores and patients' homes were negative for *Salmonella*.

RESPONSE TO DATE

On October 24, 2023, Raw Farm issued a recall of all raw milk and whole cream, based on epidemiologic, laboratory, and traceback investigations conducted by local and state officials that indicated that raw milk consumed by case-patients was produced at Raw Farm. On October 31, 2023, Raw Farm resumed production of raw milk for retail sale.

Figure 1: *S. Typhimurium* cases associated with multijurisdictional outbreak linked to Raw Farm raw milk, by date of illness onset, California, October-November 2023 (N=133)



Reported: Onset date of diarrhea symptoms.

Estimated: If diarrhea onset date is unavailable, symptom onset date is used.

Cases missing illness onset date excluded from this figure.