



Outbreak 2020-6455

***Salmonella* Newport infection associated with onions**

Background

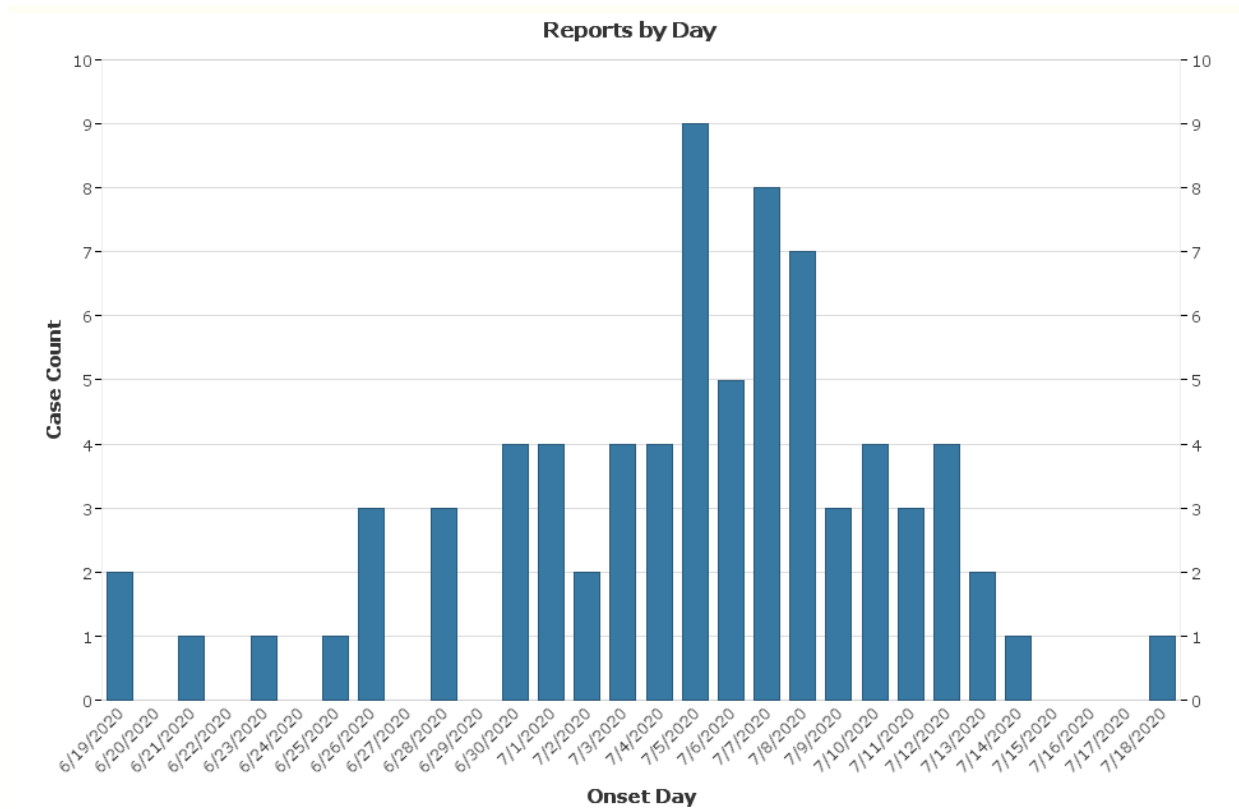
The Oregon State Public Health Laboratory identified several cases of *Salmonella* Newport infection, closely related by whole-genome sequencing. Ultimately, cases were identified in most other states and in Canada. Oregon cases included those in four sub-clusters: two in Mexican-food restaurants, one in a group of campers, and one in a long-term-care facility. Epidemiologists in the Oregon Health Authority's Public Health Division investigated cases and clusters in concert with CDC and other states to ascertain a common source.

Methods

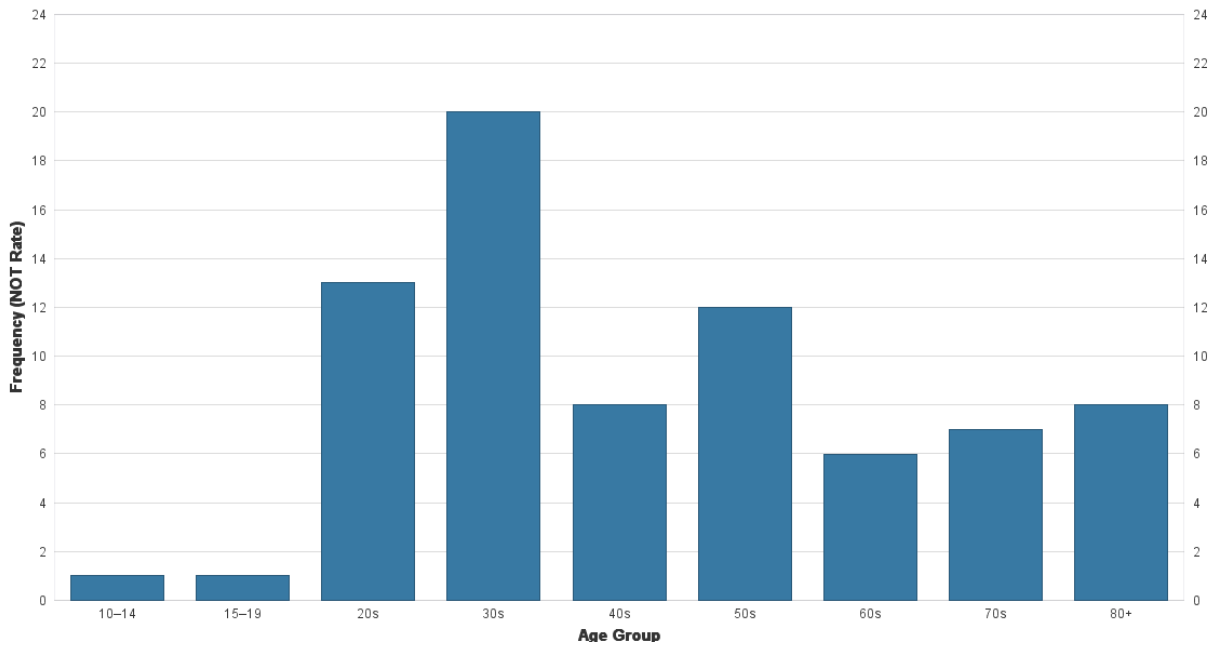
In general, a case was defined as an Oregon resident from whom *Salmonella* serotype Newport with a core-genome sequence within five alleles of the outbreak strain. Cases were initially interviewed with a standard *Salmonella* case interview, then with Oregon's extensive "shotgun" questionnaire, and eventually with an outbreak-specific interview instrument. Responses from questionnaires were compared to background rates for previously reported *Salmonella* cases. For one Mexican restaurant, an online survey was used for a case-control study, with cases defined as anyone with anyone with either bloody diarrhea, three or more loose stools in 24 hours and fever, three or more loose stools in 24 and lethargy, or vomiting and diarrhea. Univariate and multivariate analyses were conducted using SAS. Food histories and menu items were collected for the long-term care facility cases. Product invoices were collected for traceback from restaurants where cases had eaten as well as from the long-term-care facility.

Results

To date, 76 Oregon cases have been identified. They reported illness onsets from June 19 to July 18, 2020. The epidemic curve is shown in Figure 1.

Figure 1. Oregon case counts by onset date, 7/31/2020

Age groups of cases ranged from 10–14-year-olds to ≥ 80 -year-olds (Figure 2). Fifty-eight percent were female, 91% identified as white, and <5% identified as Hispanic. Eighteen (23%) of 76 have been hospitalized.

Figure 2. Oregon cases by age group, 7/31/2020

Counties in which Oregon cases reside are shown in Table 1.

Table 1. Outbreak-related *Salmonella* Newport cases, by county, Oregon June-July 2020
(Data as of 7/31/2020)

County	Cases
Clackamas	7
Columbia	1
Coos	2
Deschutes	3
Douglas	11
Jackson	11
Jefferson	1
Josephine	7
Lane	3
Lincoln	1
Marion	3
Multnomah	10
Tillamook	1
Umatilla	2
Union	1
Washington	10
Yamhill	2

From preliminary comparison of 38 cases to background exposure rates from previous salmonellosis cases: 24 cases (63%) reported consumption of onions, compared to a background rate of 45% ($P=0.02$).

From the case-control study, we analyzed 337 responses; 68 met the case definition. Items significantly associated with illness in univariate analysis are shown in Table 2.

Table 2. Items significantly associated with illness, Mexican restaurant, Oregon outbreak 2020-6455

Item	Odds ratio	95% Confidence Interval	<i>P</i> -value
House salsa	5.3	2.3–12.1	0.001
Sour cream	2.6	1.7–4.6	0.001
Guacamole	2.6	1.4–4.5	0.001

In multivariate analysis, controlling for salsa, guacamole and sour cream were no longer significant. The salsa contained red onions and the guacamole yellow onions.

Preliminary conclusions

Analysis of Oregon data to date implicated onions as a source of *Salmonella* Newport infections. House salsa served at the Mexican restaurant included red onions, the rates of consumption of “other” (i.e., not green) onions by cases were higher than the background rate, and invoices from restaurants and the long-term-care outbreak, all had jumbo red onions as a common produce item. Based on its investigation, on July 31, 2020, Public Health Canada implicated red onions imported from the United States as the cause of its highly related *Salmonella* Newport cases. Later that day, Thomson International, Inc. (Bakersfield, Calif.) announced a recall of red, yellow, white, and sweet yellow onions.

To date, 396 cases have been identified in 34 states, and 114 cases have also been identified in 5 Canadian provinces.

Links

- www.canada.ca/en/public-health/services/public-health-notices/2020/outbreak-salmonella-infections-under-investigation.html#a2
- www.cdc.gov/salmonella/newport-07-20/index.html#:~:text=Latest%20Outbreak%20Information-,On%20August%201%2C%202020%2C%20Thomson%20International%2C%20Inc.%2C,59%20hospitalizations%20have%20been%20reported.
- www.fda.gov/safety/recalls-market-withdrawals-safety-alerts/thomson-international-inc-conducts-voluntary-recall-red-yellow-white-and-sweet-yellow-onions-because