

Shiga Toxin-Producing *E. coli* O157:H7 Infections Associated with Leafy Greens

August – October

Multiple counties/Multiple States

On October 29, 2020, the Centers for Disease Control and Prevention (CDC) notified MDH that two clinical Shiga toxin-producing *E. coli* (STEC) O157:H7 isolates from Minnesota residents were closely related to recent isolates in other states. Minnesota joined the ongoing national cluster investigation.

Isolates in this cluster were closely related to the reoccurring, emerging, or persisting (REP) STEC O157:H7 strain of concern designated REPEXH02, which had been associated with reoccurring leafy greens outbreaks since 2016.

A case was defined as a person with illness onset from August 10 to October 31, 2020, from whom STEC O157:H7 closely related to the outbreak clade by WGS was isolated. Cases were initially interviewed with a routine surveillance questionnaire and subsequently re-interviewed with a national outbreak-specific questionnaire.

The United States Food and Drug Administration (FDA) conducted tracebacks of several types of leafy greens consumed by cases to identify a common source. FDA and state partners conducted inspections on farms of interest and collected environmental samples.

Overall, 40 cases from 19 states were identified in this outbreak (AZ [2], CA [6], IL [2], IN [1], KS [4], MI [3], MN [2], MO [3], ND [4], OH [1], OR [1], PA [2], TN [2], TX [1], UT [1], VA [1], WA [1], WI [2], and WY [1]). Illness onset dates ranged from August 10 to October 31, 2020. The median age of cases was 33 years (range, 1 to 85 years), and 60% were female. Of 34 people with information available, 20 (59%) were hospitalized and 4 (12%) developed hemolytic uremic syndrome (HUS). No deaths were reported.

Among 23 cases for whom information was available, 22 (96%) reported eating or maybe eating leafy greens in the week before their illness started, including spinach (16 cases), romaine lettuce (15), iceberg lettuce (12), and mixed bag lettuce (8). Although no single type or brand of leafy greens was identified as the source of the outbreak, a significantly higher proportion of cases ate spinach and romaine lettuce compared to results from the 2006 FoodNet Population Survey.

FDA conducted a traceback investigation from 10 points-of-service of multiple types of leafy greens identified in patient interviews, including romaine lettuce, spinach, and mixed baby greens. Ten cases, including one sub-cluster of four cases, were traced back across seven distribution legs. Several ranches and growers of interest were identified, but no single ranch or grower was identified as a common source of leafy greens eaten by cases.

FDA and state partners conducted large-scale environmental sampling on and around ranches in the Salinas, California region to identify factors that could have led to contamination. Samples of soil, animal droppings, compost, water, and other environmental sources were collected and analyzed. A sample of cattle feces was positive for STEC O157:H7 matching the outbreak strain; this sample was collected during follow-up investigations on a roadside, uphill from where some of the leafy greens identified in the traceback investigation were grown.

Two Minnesota cases were identified in this outbreak. By core genome multilocus sequence typing (cgMLST), the Minnesota cases differed from each other by one allele, and differed from outbreak cases in other states by 0-2 alleles. The cases were aged 27 and 44 years, and both were male. Neither case was hospitalized or developed HUS. Illness onset dates were August 10 and October 13. One case refused the full interview but reported eating a sandwich from a restaurant that may have contained leafy greens. The other case denied eating leafy greens.

This was a multi-state outbreak of STEC O157:H7 infections associated with leafy greens. While no specific ranch or farm was identified as a common source of leafy greens, previous outbreaks caused by this strain had been associated with romaine lettuce from the Salinas, California growing region, and the environmental investigation identified the outbreak strain in a sample of cattle feces collected near fields where leafy greens were grown.

References

1. Outbreak of *E. coli* Infections Linked to Leafy Greens <https://www.cdc.gov/ecoli/2020/o157h7-10-20b/index.html> [Accessed July 8, 2021]
2. Outbreak Investigation of *E. coli* – Leafy Greens (December 2020) <https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-e-coli-leafy-greens-december-2020> [Accessed July 8, 2021]