

***Salmonella* Heidelberg Infections Associated with Ground Turkey**

March

Multiple counties/Multiple states

In April 2011, the Minnesota Department of Health (MDH) Public Health Laboratory identified a *Salmonella* Heidelberg isolate with MDH pulsed-field gel electrophoresis (PFGE) pattern designation SH24; this PFGE pattern matched a ground turkey isolate collected by the Minnesota Department of Agriculture as part of the National Antimicrobial Resistance Monitoring System (NARMS) retail food study. The case refused to answer most of the questions in an interview. On May 19, PulseNet, the Centers for Disease Control and Prevention (CDC) PFGE laboratory, noticed matches in multiple states. By May 26, 30 cases had been reported in 17 states, and the CDC initiated a multi-state investigation. On that day, MDH provided information on the ground turkey isolate (e.g., specimen collection date, brand name, and antimicrobial resistance pattern) to CDC epidemiologists.

In Minnesota, a case was defined as a Minnesota resident with laboratory-confirmed infection with *S. Heidelberg* PFGE subtype SH24 or SH92. The second PFGE subtype pattern was added to the case definition based on a positive result from product collected from a case in another state as a result of the investigation.

Cases were contacted for an interview by phone regarding illness history and potential exposures. A questionnaire developed by CDC was used in addition to the Minnesota routine surveillance form.

Information collected from case interviews and information regarding the NARMS retail sample was shared with CDC, other states, and the United States Department of Agriculture Food Safety and Inspection Service (USDA-FSIS).

CDC coordinated a multi-state investigation of cases. USDA-FSIS conducted the plant investigation and initiated recalls.

Two cases, one with a *S. Heidelberg* SH24 infection and one with SH92 were identified in Minnesota. The two cases had illness onset on March 22 and 24, respectively. Both cases were hospitalized, for 1 and 5 days, respectively. Both cases recovered. A detailed symptom history was collected for the case with the *S. Heidelberg* SH92 infection. *S. Heidelberg* SH92 was recovered from a urine specimen from that case. The case had fever and blood in the urine, but denied having diarrhea or vomiting. The *S. Heidelberg* SH92 case was interviewed on March 30, before knowing that he was part of the outbreak. The case reported eating ground turkey in the week prior to illness, but did not know the brand name. The case was re-interviewed on August 8 using CDC's multi-state outbreak investigation form. The case reiterated that he had consumed ground turkey of unknown brand. The *S. Heidelberg* SH24 case refused to answer most questions regarding exposures, but it was determined that neither case traveled in the 7 days prior to their illness.

Antimicrobial susceptibility testing was conducted on the *S. Heidelberg* SH24 isolate, and it was resistant to ampicillin, gentamicin, streptomycin and tetracycline.

The ground turkey isolate was collected from a grocery store as part of NARMS sampling on March 7. It was Brand A. The isolate was resistant to ampicillin, gentamicin, streptomycin and tetracycline.

Nationally, 136 cases with the two outbreak strains of *S. Heidelberg*, SH24 (n=109) and SH92 (n=27), were reported from 34 states: Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Vermont, and Wisconsin [1]. Illness onset dates were between February 27 and September 13, 2011. The median age of cases was 23 years (range, <1 year to 90 years). Fifty-five percent were male. Among the 94 cases with available information, 37 (39%) were hospitalized. One death was reported.

Among the 94 cases with available information, 51 (54%) reported consuming ground turkey. This proportion was significantly higher than the results from a FoodNet survey of healthy persons in which 11% of persons interviewed reported consuming ground turkey in the 7 days before they were interviewed. Of the 13 *S. Heidelberg* SH92 cases that were interviewed, 12 (92%) reported consumption of ground turkey in the 7 days before their illness began [1].

In addition to the Minnesota NARMS samples, four NARMS ground turkey samples collected in other states between March 7 and June 27 yielded *S. Heidelberg* SH24, and one NARMS sample yielded *S. Heidelberg* SH92. The brand name for the positive ground turkey samples was Brand A, and all of the

positive products originated from a common food-production establishment, Cargill Meat Solutions Corporation in Springdale, Arkansas. A sample of leftover unlabeled frozen ground turkey from the home of a case in Ohio yielded both outbreak strains on July 29 [1].

Antibiotic resistance information was available for isolates from 12 samples of ground turkey collected at retail and from 23 cases. The isolates from the ground turkey samples were resistant to ampicillin, streptomycin, tetracycline, and gentamicin. All isolates from humans for which antimicrobial susceptibility testing was conducted were also resistant to ampicillin and tetracycline, and some were also resistant to gentamicin and streptomycin [1].

On July 29, USDA-FSIS released a public health alert for frozen or fresh ground turkey products. On August 3, Cargill Meat Solutions recalled 36 million pounds of ground turkey products produced at the Springdale, Arkansas plant.

This was a multi-state outbreak of *S. Heidelberg* infections associated with consumption of ground turkey products produced by Cargill Meat Solutions. The outbreak led to a ground turkey product recall. Two cases associated with this outbreak were identified in Minnesota.

Reference

1. Centers for Disease Control and Prevention. Multistate Outbreak of Human *Salmonella* Heidelberg Infections Linked to Ground Turkey. <http://www.cdc.gov/salmonella/heidelberg/index.html>