

***Salmonella* Enteritidis Infections Associated with Commercially Distributed Organic Eggs**

August-October

Multiple counties

On September 2, 2011, the Minnesota Department of Health (MDH) Public Health Laboratory (PHL) notified MDH epidemiology staff of three *Salmonella* Enteritidis isolates with indistinguishable pulsed-field gel electrophoresis (PFGE) patterns that were identified through routine surveillance; the subtype was designated SE1B173. This subtype had not previously been identified in Minnesota. Attempts were made to interview all individuals with a standard questionnaire. Over the next month, two additional indistinguishable isolates were identified by the MDH PHL. On interviews, cases reported organic egg consumption under multiple brand names. An investigation was initiated on October 7.

A confirmed case was defined as a person who had a *S. Enteritidis* isolate that matched the outbreak PFGE pattern (SE1B173), with a specimen collected from August 1, 2011 to October 31, 2011. A probable case was defined as a person who had *S. Enteritidis* isolated from their stool from August 1, 2011 to October 31, 2011 and reported consuming the implicated product. Cases were interviewed with a broad-based questionnaire and re-interviewed several times about various specific food items.

A case-control study was initiated on October 7 to evaluate food items frequently reported by cases. Three controls for each case were recruited using phone lists generated using reverse-directory of addresses in the vicinity of the case's home. Controls were restricted to individuals who reported no diarrhea or vomiting since August 1 and were age-matched to cases using the categories 5-18, 19-39, 40-59, and ≥ 60 years.

On October 7, the Minnesota Department of Agriculture (MDA) was notified of the *S. Enteritidis* cases. MDA conducted a traceback investigation of the implicated product.

Epidemiologic investigation

Eight cases were identified, including seven confirmed cases and one probable case. Illness onset dates ranged from August 12 to October 20. Six (75%) cases were female, and the median age was 25.5 years (range, 5 to 70 years). Of the eight cases, all eight reported diarrhea and fever, six (86%) of seven reported cramps, four (50%) reported bloody diarrhea, and four (50%) reported vomiting. The six cases who had recovered at the time of interview had a median illness duration of 10 days (range, 7 to 13 days). Three (38%) cases were hospitalized, for 3 days each.

A total of 6 cases and 18 controls were enrolled in the case-control study. Consuming organic eggs from Farm X was statistically associated with illness (5 of 6 cases vs. 1 of 15 controls; odds ratio, 75.0; 95% confidence interval, 3.9 to 1,434.1; $p < 0.001$). No other brand of eggs was statistically associated with illness.

Traceback investigation

Traceback revealed that Farm X was a common supplier for six cases who supplied purchase location information.

On October 14, MDA inspectors visited the farm to review records and sample the barn and processing/candling areas. Two samples, both taken from the egg belt, tested positive for *S. Enteritidis* on October 19; both samples ultimately were identified as the outbreak strain by PFGE.

Record review showed that in addition to eggs produced at the Owatonna farm, eggs produced at multiple farms were packed at the Owatonna farm and sold under the Farm X brand name. On October 19, Farm X issued a voluntary recall of all eggs packed at the Owatonna farm. Eggs included in the recall were packaged under three different brand names. Eggs were packaged both in bulk and various size cartons. Eggs affected by the recall were distributed to restaurants, grocery stores, food wholesalers and foodservice companies in Minnesota, Wisconsin and Michigan. On October 19, MDH and MDA issued a joint press release notifying the public about the outbreak and subsequent recall.

This was an outbreak of *S. Enteritidis* SE1B173 infections associated with commercially distributed organic eggs. The outbreak strain was found on the egg belt at the implicated farm. Following the product recall, the Owatonna farm was depopulated, cleaned, and tested negative for *S. Enteritidis* before producing eggs again.