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**County of Los Angeles • Department of Health Services**  
**Public Health**  
**Acute Communicable Disease Control**  
**Special Studies Report 2000**

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**AN OUTBREAK OF *SALMONELLA* SEROTYPE THOMPSON ASSOCIATED WITH  
HAMBURGER BUNS**

**BACKGROUND**

The Los Angeles County Department of Health Services (LAC DHS) received a report of a cluster of gastrointestinal illnesses associated with a catered luncheon serving two neighboring office buildings located in Whittier, CA. The luncheon was held July 14, 2000 at noon, and catered by a company located in Orange County. Hamburgers, chicken burgers, condiments, lettuce, tomatoes, fruit salad, cookies, lemonade and iced tea were served from two identically set buffet tables in the courtyard at one of the office buildings. LAC DHS Acute Communicable Disease Control Unit (ACDC) conducted an epidemiologic investigation of the outbreak. One ill person was confirmed as having *Salmonella* early in the investigation..

**METHODS**

Case Definition

An outbreak-associated salmonellosis case was defined as a person associated with the catered office building complex luncheon with (1) culture positive for *Salmonella* Ser. Thompson (ST) or (2) diarrhea and fever or (3) diarrhea and two or more of the following symptoms: nausea, vomiting, abdominal cramps, headache, body aches.

ACDC obtained a list of food items served at the luncheon. A standardized questionnaire was developed and distributed to all attendees. Supplemental questionnaires also were distributed for Sensitive Occupation/Situation (SOS) and additional exposure information. Following the discovery of a positive *Salmonella* group C1 case, stool specimens were requested from those attendees who reported illness and were working in an SOS. Two site visits were made. Data was analyzed using EpiInfo and SAS. Pulsed-field gel electrophoresis (PFGE) analysis was completed on available specimens of the culture-confirmed cases by LAC DHS Public Health Laboratory. Orange County Environmental Health inspected the catering company, while LAC DHS interviewed for additional information.

**RESULTS**

The number of persons attending the event was estimated to be 250. We were able to contact 202 individuals (81% response rate) for detailed information. A total of 47 individuals met a case definition: 35 clinical based on presentation of symptoms and 12 with laboratory confirmation. The most frequent symptoms reported by cases were diarrhea and cramps. Sixty-three percent reported fever. A detailed analysis of the case *Salmonella* Ser. Thompson isolates revealed indistinguishable patterns by PFGE technology.

Food-specific analysis indicated several food categories as suspect vehicles for infection, including

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lemonade, hamburgers, hamburgers/chicken burgers and one of the buffet tables (Table A). A risk-ratio for the combined hamburger/chicken burger category could not be calculated, but all ill individuals reported eating either a hamburger or a chicken burger (Fisher-exact two-tailed p-value=0.3). Only Table A and lemonade were significantly associated ( $p < 0.05$ ) with illness in the crude risk ratio calculations. Stratified analysis of hamburger, lemonade, and cookie by Table A was performed in EpiInfo. Again, the statistics for the category including those exposed to either hamburger or chicken burger could not be calculated. Only hamburger had a risk ratio greater than one (RR=1.95, CI=1.06-3.59) among those exposed to Table A. However, 29% of the cases reported exposure to Table B. The logistic regression model included hamburger, lemonade, and Table A. Only Table A was significant in the regression model, with a risk ratio of 1.79 (CI=1.02-2.68).

Orange County Environmental Health Division inspected the catering company July 26, 2000 in Santa Ana, CA. The inspection report did not indicate any major violation which would contribute to the illness reported. The details of the food preparation and table set-up were obtained from an interview with the catering company's president.

### **The Multi-county Outbreak - a Missing Link**

In August 2000, the California Department of Health Services identified an increase in case reports of ST involving Southern California counties. This illness cluster started during the same month as the office building complex, but involved sporadic cases of ST. The Southern California cases gave histories of eating a hamburger on a bun in a restaurant. Many of the cases, including 11 additional LAC cases, ate at different locations of a specific chain restaurant (Chain A) in Southern California and Arizona, as well as other restaurants in Southern California. The source of this outbreak was eventually determined by Orange County DHS to be a food worker who worked at Bakery B in Orange County. The bakery supplied hamburger buns to the caterer involved with the office building outbreak as well as to Chain A restaurants and other restaurants. A food worker at Bakery B was stool culture positive for ST, with an onset of illness July 13, 2000 and was reported to have worked while symptomatic. The job duties of this food worker included taking freshly baked buns off the rack, feeding them through a slicer, and then packaging the buns. This activity was done without the use of gloves. PFGE analysis of both the office building complex and the multi-county/state outbreak ST isolates and the food worker had indistinguishable patterns.

### **CONCLUSIONS**

*Salmonella* Ser. Thompson was the etiologic agent responsible for the office building complex outbreak as well as the multi-county/state outbreak. The culture-positive Bakery B worker who handled the buns was the source of contamination of the buns which were supplied to the caterer and Chain A restaurants. The distribution of the buns to various commercial facilities extended the outbreak over a wide geographic area.