

**Outbreak of *Salmonella* Newport Infections Associated with the
Barto's Idle Hour Restaurant - Crawford County, August 2009**

FINAL REPORT



Background

On September 3, 2009, the Kansas Department of Health and Environment Bureau of Surveillance and Epidemiology (KDHE-BSE) was notified of a possible outbreak of gastrointestinal illness among individuals who ate a meal from Barto's Idle Hour Restaurant, 201 S Santa Fe, Frontenac, KS 66763 on August 28th. The initial complaint indicated that six out of seven people became ill after eating food from Barto's Idle Hour. In response to this complaint, an outbreak investigation was initiated by staff from KDHE-BSE, the Crawford County Health Department (CCHD), and the Kansas Department of Agriculture (KDA).

On September 9th, a physician notified KDHE of a laboratory-confirmed *Salmonella* case. During the case interview, the CCHD learned that this individual had eaten food from Barto's Idle Hour Restaurant. Review of routine surveillance data for Crawford County identified four additional salmonellosis cases whose specimen collection dates ranged from August 30th through September 7th. Serotype information was reported as *S. Newport* for one of the cases. Further follow-up with these cases revealed that all had eaten food from this restaurant.

Methods

Epidemiologic Investigation

Staff from CCHD conducted preliminary interviews with the individuals who filed the initial foodborne illness complaint. A paper-based outbreak-specific questionnaire was developed and administered to obtain additional information regarding the restaurant exposure. To identify additional cases statewide, a Kansas Health Alert Network (KS-HAN) message was sent to the local health departments (LHDs) to notify them of the outbreak. In response, staff at Sedgwick County Health Department (SCHD) informed KDHE of a *S. Newport* case in their county who reported eating at the restaurant.

To determine the cause of illness, a case-control study was initiated. Credit card receipts were requested from the restaurant owner to identify additional cases and potential controls.

A case was defined as an individual who became ill after eating food from Barto's Idle Hour on August 25 – August 29 and had one of the following clinical criteria: (1) a laboratory-confirmed *Salmonella* result, (2) vomiting and/or diarrhea, OR (3) nausea, stomach cramps, and a fever in the absence of vomiting and diarrhea. Controls were selected among patrons who did not report illness after eating at the restaurant.

The Health Risk Studies Program (HRSP) within the Bureau of Health Promotion at KDHE assisted with interviewing cases and controls. The HRSP conducted the interviews on September 20 – 22.

Completed questionnaires were entered into a Microsoft® Access database and analyzed using SAS® 9.1 by BSE. Odds ratio (OR) and 95% confidence intervals (CI) were calculated to assess the association between potential risk factors and subsequent illness.

Environmental Assessment

Inspections of the facility were conducted by the KDA on September 10th and September 16th. A self-administered questionnaire was distributed to all employees at the facility on September 10th to assess illness, work history, and food consumption history.

Laboratory Analysis

The Kansas Health and Environment Laboratory (KHEL) received six of 13 confirmed specimens and conducted serotype testing. Three specimens were tested at the Oklahoma State Department of Health and four were tested at the Missouri Department of Health and Senior Services Laboratory.

Results

Epidemiologic Investigation

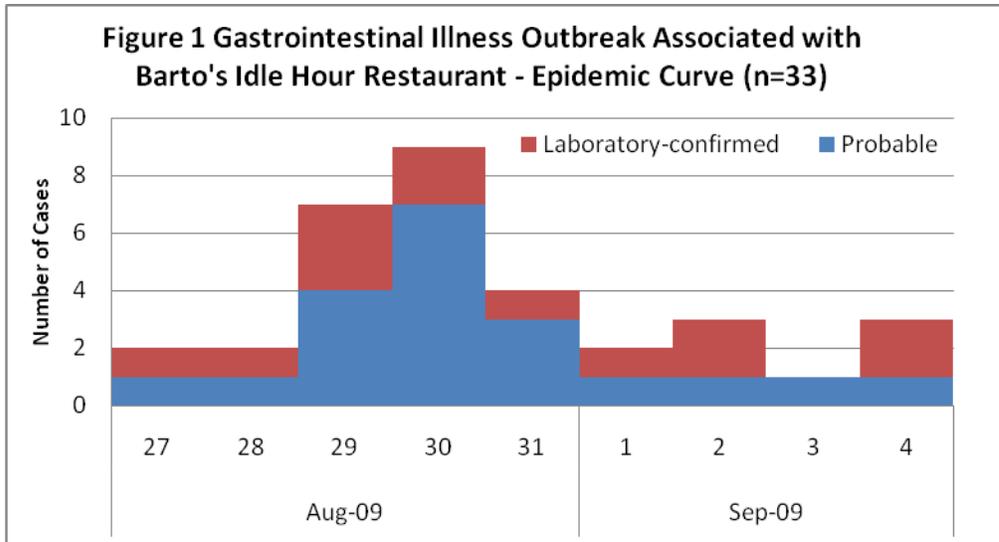
A total of 107 restaurant patrons were interviewed. Thirty-six individuals reported illness. Of those, 33 (79%) met the case definition. Thirteen (39%) of the 33 cases were laboratory-confirmed as *S.Newport*.

Symptom information is reported in Table 1. Diarrhea was the most common symptom, followed by abdominal cramps, body aches, and nausea. Twenty (61%) cases sought medical care from a physician, 11 (33%) were seen in the emergency room, and 7 (21%) were hospitalized. Age of cases ranged from 14 – 80 years (median = 56 years), and 23 (70%) of the cases were female.

Table1: Clinical Information of Cases (n=33)

<i>Symptoms</i>	<i># with symptoms / # of respondents (%)</i>
Diarrhea	31/33 (94%)
Abdominal Cramps	27/33 (82%)
Body Aches	24/33 (73%)
Nausea	22/33 (67%)
Fever	21/33 (64%)
Vomiting	8/33 (24%)

Figure 1 shows that onset dates of illness ranged from August 27 – September 4, with a majority of individuals reporting illness on August 30th. The incubation period ranged from 1 to 7 days, with a median of 2 days.



Date of recovery was reported by 13 cases, and duration of illness ranged from 1 to 17 days with a median of 5 days.

The analysis conducted identified three food items that were associated with illness: sandwiches, tossed salad, and German potato salad (Table 2). Only sandwiches and tossed salad were significantly associated with illness. A common ingredient shared between the sandwiches and potato salad was raw onion. Consuming any raw onion (on the sandwiches or in the potato salad) was significantly associated with illness. A common ingredient between the sandwiches and the tossed salad was lettuce. Consuming any lettuce (on the sandwiches or the tossed salad) was significantly associated with illness. Data analysis did not reveal any association between sex and illness or date of exposure and illness.

Table 2: Exposure Information

<i>Food Item</i>	<i>Odds Ratio</i>	<i>95% Confidence Interval</i>
Sandwiches	17.5	2.05 – 149.3
Tossed Salad	5.8	1.06 – 31.72
German Potato Salad	2.3	0.95 – 5.86
Ice	0.77	0.32 – 1.83
Appetizers	0.48	0.06 – 3.60
Fried Chicken	0.12	0.02 – 0.6
<i>Individual Ingredient</i>		
Any Raw Onion	22.15	2.85 – 172.08
Any Lettuce	7.88	1.96 – 31.57

Environmental Assessment

The KDA conducted an inspection of the restaurant on September 10th and September 16th. The inspection on September 10th revealed two critical violations: (1) improper

cold holding temperatures of potentially hazardous foods and (2) missing a backflow prevention device to prevent back siphonage on the three compartment sink. The second inspection on September 16th identified three critical violations: (1) bare hand contact with ready to eat foods; (2) improper use of paper towel to handle ready-to-eat foods; and (3) missing backflow prevention device to prevent back siphonage on the dish machine, three compartment sink and the ice maker. No employees reported illness prior to, during, or after the time period in question.

A Hazard Analysis of Critical Control Points (HACCP) was conducted at the restaurant on October 14th by KDA. The HACCP revealed the following: (1) cold-holding temperature management issues with the potato salad; (2) potential cross-contamination from prepping the raw onion, lettuce, and raw chicken on the same stainless steel table; and (3) potential cross-contamination from using the same knives to cut the potatoes, dice the raw onion, and cut raw chicken. KDA recommended temperature management protocols be followed to reduce the time the potentially hazardous food (potato salad) was in the danger zone.

KDA requested and received copies of the invoices for food items purchased by the restaurant. For the time period of August 25 – August 29, the restaurant had two shipments of raw onions and lettuce received on August 20th and August 27th. Both shipments came from the same company that ships product nationwide.

Laboratory Analysis

Thirteen isolates were laboratory-confirmed as *S. Newport*, and all were indistinguishable by pulsed-field gel electrophoresis (CDC pattern name: JJPX01.0213). Of the six specimens that KHEL received, second enzyme testing was conducted on two of the specimens. The patterns for these two specimens were also indistinguishable by the second enzyme.

Discussion

This was an outbreak of *Salmonella Newport* associated with the Barto's Idle Hour restaurant in Crawford County. The outbreak was identified through a foodborne illness complaint and review of routine surveillance data. The epidemiologic and clinical data collected for this outbreak are consistent with a point-source outbreak. Patrons who became ill had dined at the establishment between August 25th and August 29th, with a majority of the individuals reporting onset of illness on August 30th.

Three food items were associated with illness: sandwiches, tossed salad, and potato salad. The common ingredients associated with illness included the raw onion served in both the sandwiches and potato salad and the lettuce served in the sandwiches and tossed salad. Consumption of any raw onion or any lettuce was associated with subsequent illness, and both of these findings were statistically significant. Food preparation procedures, cross contamination, or contaminated produce are all potential causes of this foodborne disease outbreak.

There are several possible scenarios that could have occurred to cause this outbreak. One plausible scenario is the fresh produce served to the ill patrons was contaminated prior to delivery and preparation at the restaurant. A second scenario is the stainless steel table used to prepare the raw onions, lettuce, and raw chicken was not adequately cleaned and sanitized between procedures. A third scenario is the knives were not cleaned and sanitized between cutting the potatoes, raw chicken and onions. No other *S. Newport* cases with matching PFGE patterns were identified nationally during this same timeframe; therefore, the cause of the outbreak is less likely a result of contaminated produce distributed and received at the restaurant. The outbreak appears more likely to have been caused by one of the latter two scenarios because the outbreak was limited to this restaurant and occurred within a short time frame.

Foods obtained from animals are important sources of human *Salmonella* infections. Transmission of *Salmonella* spp. to humans can occur from exposure to various food vehicles, including eggs, meat, poultry, and produce, and via direct contact with animals and their environments¹. Simple, effective measures can be used to reduce the risk of foodborne illness. Proper cooking, cooling, adequately cleaning equipment, and not preparing food while ill are all important steps to reducing foodborne illnesses.

References

1. CDC, (2006). Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food --- 10 States, United States, 2005. MMWR, 55(14); 392-395.

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As the state's environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans.

Through education, direct services, and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent injuries, illness, and foster a safe and sustainable environment for the people of Kansas.