

MINNESOTA DEPARTMENT OF HEALTH 1999 GASTROENTERITIS OUTBREAK SUMMARY

Foodborne Outbreaks
Waterborne Outbreaks
Non-Foodborne, Non-Waterborne Outbreaks
Foodborne Illness Complaints
Foodborne Disease Outbreak Investigation Guidelines



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**Minnesota Department of Health
1999 Gastroenteritis Outbreak Summary**

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DEFINITIONS:

CONFIRMED FOODBORNE OUTBREAKS

A confirmed foodborne disease outbreak is defined as an incident in which two or more persons experience a similar illness after ingestion of a common food or meal and epidemiologic evaluation implicates the meal or food as the source of illness. Confirmed outbreaks may or may not be laboratory-confirmed.

Confirmed outbreaks may be classified as:

1. Laboratory-Confirmed Agent: Outbreaks in which laboratory evidence of a specific etiologic agent is obtained.
2. Epidemiologically Defined Agent: Outbreaks in which the clinical and epidemiologic evidence defines a likely agent, but laboratory confirmation is not obtained.
3. Outbreak of Undetermined Etiology: Outbreaks in which laboratory confirmation is not obtained and clinical and epidemiologic evidence cannot define a likely agent.

PROBABLE FOODBORNE OUTBREAKS

A probable foodborne disease outbreak is defined as an incident in which two or more persons experience a similar illness after ingestion of a common food or meal, and a specific food or meal is suspected, but person-to-person transmission or other exposures cannot be ruled out.

CONFIRMED AND PROBABLE WATERBORNE OUTBREAKS

Similar to foodborne outbreaks, except epidemiologic analysis implicates water as the source of illness. Waterborne outbreaks may be associated with drinking water or with recreational water.

CONFIRMED AND PROBABLE NON-FOODBORNE, NON-WATERBORNE OUTBREAKS

Non-foodborne, non-waterborne outbreaks are defined as two or more cases of illness related by time and place in which an epidemiologic investigation suggests either person-to-person transmission occurred or a vehicle other than food or water (e.g., animal contact) is identified.

Summary

In 1999, the Minnesota Department of Health Acute Disease Epidemiology Section identified 40 confirmed foodborne outbreaks, 14 probable foodborne outbreaks, one confirmed waterborne outbreak and 31 non-foodborne, non-waterborne gastroenteritis outbreaks. From these 86 outbreaks, 1,326 cases were identified.

Of the 40 confirmed foodborne outbreaks, 24 (60%) were either laboratory-confirmed (n=8) or epidemiologically defined (n=16) as outbreaks of Norwalk-like calicivirus gastroenteritis. Nine (23%) of the confirmed foodborne outbreaks were due to bacterial foodborne pathogens (e.g., *Salmonella*, *E. coli* O157:H7, *Listeria*), five (12%) were due to foodborne bacterial intoxications (e.g., *Clostridium perfringens*, *Staphylococcus aureus*, *Bacillus cereus*), and two (5%) were of unknown etiology. Fifteen outbreaks (38%) were associated with restaurants.

The importance of Norwalk-like caliciviruses as a cause of foodborne disease outbreaks in 1999 continues a pattern that has been observed for two decades in Minnesota. From 1981-1999, 144 (43%) of 335 confirmed outbreaks of foodborne disease were due to viral gastroenteritis, while 67 (20%) confirmed foodborne outbreaks were caused by the major bacterial foodborne pathogens (*Salmonella*, *Campylobacter*, *E. coli* O157:H7, *Shigella*, and *Listeria*). Therefore, over this 19-year period the combined number of foodborne outbreaks due to bacterial agents was less than half the number of foodborne outbreaks due to viral gastroenteritis.

In 1999, there was one confirmed waterborne outbreak of cryptosporidiosis associated with a swimming pool in a mobile home park.

There were 31 non-foodborne, non-waterborne outbreaks of gastroenteritis identified in 1999. An outbreak of *Salmonella typhimurium* was caused by exposure to infected cats obtained from a local humane society. However, most outbreaks in this category were associated with person-to-person transmission in nursing homes, schools, or daycares. There were six outbreaks of shigellosis associated with daycares, causing at least 187 illnesses, of which 106 were culture-confirmed. These outbreak-associated *Shigella* cases accounted for 42% of all *Shigella* infections reported in Minnesota in 1999.

CONFIRMED FOODBORNE OUTBREAKS

(1)

Viral Gastroenteritis Associated with a Restaurant

January

Kandiyohi County

On January 8, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastroenteritis occurring among a group of 26 persons who attended a brunch at a restaurant in Atwater on January 3. Another complaint was received from an unrelated party of two persons who became ill following a meal at the same restaurant on January 1. Lists of attendees and foods served at the brunch were obtained. Epidemiologists from MDH contacted attendees regarding food consumption and illness histories. A sanitarian from Kandiyohi Community Health Services interviewed all employees regarding food consumption and illness histories. A case was defined as an individual with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). No stool samples were collected.

Nineteen persons were interviewed; 15 (79%) met the case definition. Twelve (80%) had vomiting, 12 (80%) had nausea, 11 (73%) had diarrhea, seven (47%) had fever and no one had bloody diarrhea. Dates of illness onset ranged from January 4 to January 6, with an incubation period of 20 to 46 hours (median incubation, 32 hours). Duration of illness ranged from 26 to 102 hours (median duration, 56 hours). Four ill food workers were identified through employee interviews. Illness onset dates for food workers ranged from December 29, 1998 to January 6, 1999. Only two non-ill attendees were identified through interviews; therefore, no food items could be statistically associated with illness. However, the clustering of case onset dates with similar illness profiles and an additional complaint from an unrelated party strongly suggested illness was associated with eating at the restaurant. No restaurant inspection was performed because the restaurant had been inspected 2 weeks prior to this outbreak. Proper protocols regarding employee illness were reviewed with the restaurant.

This was an outbreak of viral gastroenteritis associated with eating at a restaurant. The source of the contamination was likely an infected food worker.

(2)

***Clostridium perfringens* Intoxication Associated with Chicken Served at a Catered Luncheon**

January

Anoka County

On January 6, 1999 a sanitarian with the Anoka County Community Health and Environmental Services (ACCHEs) contacted the Minnesota Department of Health (MDH) regarding a report of diarrheal illness among employees of a medical clinic in Coon Rapids following a catered luncheon. The luncheon, held on January 5, was catered by a restaurant. The initial report given was that 26 of 28 luncheon attendees subsequently became ill with a diarrheal illness. The medical clinic provided MDH with names and telephone numbers of luncheon attendees. Cases were defined as luncheon attendees who developed vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the luncheon. Twenty-four party attendees were interviewed; of these, 20 (83%) met the case definition and one had gastrointestinal symptoms that did not meet the case definition. Stools from three cases were tested for *Clostridium perfringens* enterotoxin type A and were cultured for *Bacillus cereus*. One stool was collected on January 9 and the other two on January 11.

Of the 20 cases, all had diarrhea, 19 (95%) had abdominal cramps, 15 (75%) had nausea, eight (40%) had headache, four (20%) had fever, and two (10%) had vomiting. No cases reported blood in their stools. The median incubation period was 8.25 hours (range, 1-15 hours). The median number of stools per 24-hour period

was five (range, 3-20 stools). The median duration of diarrhea was 0.5 days (range, 0.5-2 days). All three stools were negative for *C. perfringens* enterotoxin type A and *B. cereus*. Sixteen (89%) of 18 cases reported eating a food item containing chicken (i.e., chicken burrito or chicken enchilada), compared to none of three controls (odds ratio, undefined; lower limit 95% confidence interval, 1.8; p= 0.008). ACCHEs sanitarians reported two potential food-handling errors that could have contributed to the outbreak. The first was storage of leftover chicken in a walk-in cooler in pans that were too deep to permit quick cooling. The second potential error was that the leftover chicken may have been reheated using a steam table on the day of the catered luncheon; reheating in this manner may have been slow and/or inadequate, permitting bacterial growth.

Collection of stool specimens occurred well after clinical symptoms ceased, so negative tests for *C. perfringens* toxin and *B. cereus* were not unexpected. The distribution of incubation periods and clinical symptoms, along with the implicated chicken vehicle, suggest an etiology of *C. perfringens*. The food-handling errors indicated, namely improper cooling and inadequate reheating of meat, are typical of those which allow clostridial growth.

(3)

***E. coli* O157:H7 Infections Associated with Commercially Distributed Hamburger**

January

Multi-County, Multi-State

During February-March, 1999 the Acute and Infectious Disease Epidemiology Program of the Maine Bureau of Health investigated an outbreak of *E. coli* O157:H7 infections involving guests and employees at a ski resort. The outbreak was associated with consumption of ground beef patties produced by a company based in Rochester, Minnesota. Isolates of *E. coli* O157:H7 from cases and from intact packages of ground beef patties were indistinguishable by pulsed-field gel electrophoresis (PFGE). Ground beef products produced by the company on December 1, 1998 were subsequently recalled. The outbreak PFGE pattern was posted on PulseNet. The Minnesota Department of Health (MDH) Public Health Laboratory received three isolates of *E. coli* O157:H7 from Minnesota residents through routine surveillance during January 1999 which had a PFGE pattern indistinguishable from the outbreak pattern.

The three *E. coli* O157:H7 cases were interviewed by epidemiologists from MDH as part of routine surveillance activities. Ground beef sources for cases were evaluated in cooperation with the Minnesota Department of Agriculture and the United States Department of Agriculture. Two of the three cases were siblings, a 9-year-old female and 11-year-old male, from Crow Wing County. The other case was a 48-year-old female from St. Louis County. All three cases were hospitalized; the duration of hospitalization ranged from 2 to 14 nights (median, 5 nights). None of the cases developed hemolytic uremic syndrome. None of the cases had traveled outside of Minnesota during the week prior to onset of illness. The St. Louis County case reported eating an undercooked hamburger at a restaurant 3 days prior to onset of illness; a traceback revealed that this hamburger was supplied by the Rochester-based meat company. The sibling cases from Crow Wing County reported consuming ground beef, but no definitive link with this ground beef and the meat company was identified.

Three Minnesota cases of *E. coli* O157:H7 infection were identified that were part of a multi-state outbreak due to consumption of commercially distributed ground beef.

(4)

***Clostridium perfringens* Intoxication Associated with Lasagna Prepared in a Restaurant**

February

Olmsted County

On February 16, 1999 Olmsted County Public Health Services (OCPHS) received a foodborne illness complaint call reporting that several members of a group became ill after eating at a restaurant in Rochester on February 15. No other common meals were identified among the group. The restaurant manager was interviewed and asked to

provide a menu of foods served on February 15, a list of the foodhandlers who prepared the food served on that day, and a list of patrons who ate there. All foodhandlers involved in preparing food served on February 15 were interviewed to determine job duties and history of illness and were observed for personal hygiene and food-handling practices. A food preparation review was conducted by OCPHS sanitarians. All persons who could be identified as February 15 patrons were interviewed by OCPHS epidemiologists about food consumption and illness history using a standard interview form. A case was defined as a person with diarrhea (≥ 3 stools in a 24-hour period) or vomiting after eating at the restaurant. Stool specimens from three ill patrons were submitted to the Minnesota Department of Health for viral, bacterial, and bacterial toxin testing; all three patrons were recovered at the time of specimen collection.

Seventeen patrons were interviewed, and six (36%) met the case definition. Five (83%) cases had diarrhea, four (67%) had cramps, three (50%) had fever, and two (33%) had vomiting. The median incubation was 4 hours (range, 3 to 24 hours) and the median duration of illness was 8 hours (range, 1 to 14 hours). All three stool samples collected were negative for *Bacillus cereus*, *Clostridium perfringens* enterotoxin A, *Staphylococcus aureus*, *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Lasagna, served both from the main menu and the buffet, was associated with illness (6 of 6 cases vs. 4 of 11 controls; odds ratio, undefined; $p < 0.02$). No foodhandlers reported illness, and there were no foods from the buffet available for laboratory analysis. A food preparation review suggested that the lasagna served on February 15 had been improperly cooled in a walk-in refrigerator after cooking and had not been reheated adequately prior to being served on the buffet.

This was an outbreak of gastroenteritis clinically and epidemiologically consistent with *Clostridium perfringens* intoxication. The vehicle improperly prepared lasagna served in a restaurant.

(5)

Calicivirus Gastroenteritis Associated with a Luncheon

February

Hennepin County

On February 26, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among employees who ate at a company in Bloomington between February 21 and February 24. A grand opening celebration was held at the company on February 21. On February 24, employees ate box lunches or from a buffet. All meals were prepared at the kitchen on site. The investigation was conducted by the City of Bloomington. Lists of attendees and foods served were obtained. Individuals were interviewed about food consumption and illness history. A case was defined as a person with vomiting and/or diarrhea plus one other symptom. Thirteen stool samples were collected and tested for bacterial pathogens; eight were tested for calicivirus. Food workers were interviewed by a sanitarian about job duties and illness history.

One hundred and ninety-two attendees were interviewed, and 63 (33%) met the case definition. Fifty-nine (94%) cases reported diarrhea, 32 (51%) reported vomiting, and 23 (38%) reported fever. Incubation and duration of illness could not be calculated from the summary data provided by the City of Bloomington. Pasta salad served as part of the lunch boxes (30 of 31 cases vs. 17 of 23 controls; odds ratio, 11; 95% confidence interval, 1.1 to 254; $p = 0.02$) and strawberries served at the buffet (8 of 17 cases vs. 9 of 65 controls; odds ratio, 5.5; 95% confidence interval, 1.5 to 21; $p = 0.006$) were associated with illness. All stool samples tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*. The eight samples tested for calicivirus were positive. No illnesses were reported by food workers.

This was an outbreak of gastroenteritis caused by calicivirus. Illness was associated with eating pasta salad that was part of the box lunch and strawberries served at the buffet. Although there were illnesses before those two meals, the majority of cases (67%) occurred 24 to 48 hours after the buffet and box lunches were served. The association of illness with two foods prepared in the same kitchen suggests that foods were contaminated by a food worker, but no ill food workers were identified.

(6)

Viral Gastroenteritis Associated with a Bowling Banquet

April

Ramsey County

On May 6, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among 25 persons who attended a bowling banquet held at an entertainment center in St. Paul on April 23. Lists of attendees, foods served during the banquet, and food workers were obtained. Persons were interviewed about food consumption at the banquet and illness history by epidemiologists from MDH. A case was defined as any person who had attended the event and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Given that the complaint was received 13 days after the event, no stool samples were collected for bacterial and viral pathogen testing. A sanitarian from the City of St. Paul interviewed foodhandlers regarding illness history.

Twenty-three (88%) of 26 attendees were interviewed, and nine (39%) met the case definition. Seven (78%) cases had diarrhea, seven (78%) had vomiting, four (44%) had fever, and no one had bloody stools. Dates of illness onset were April 23 through April 28. Incubation periods ranged from 5 to 107 hours, with a median of 35 hours, and duration of symptoms ranged from 24 to 83 hours, with a median of 35.5 hours. No food workers reported illness. All cases had recovered by the time of the investigation. Two food items were associated with illness, including raw onions which were served in the salad (6 of 6 cases vs. 1 of 9 controls; odds ratio [OR], undefined; 95% confidence interval [CI] lower limit, 6; $p=0.0002$), and julienne string beans (8 of 8 cases vs. 7 of 14 controls; OR, undefined; 95% CI lower limit, 1; $p=0.02$).

A routine inspection of the establishment was conducted on April 26. The inspection revealed several violations, including an overcrowded refrigerator, inadequate refrigerator temperature, foods stored on the floor of the walk-in freezer, and a hand sink not conveniently located. A meeting between the sanitarian and management was held on May 12 to address corrective measures.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. Illness was associated with the consumption of raw onions and julienne string beans at a banquet held at an entertainment center.

(7)

Viral Gastroenteritis Associated with an Elementary School

May

Ramsey County

On May 5, 1999 the Minnesota Department of Health (MDH) was notified of an increase in absences due to gastrointestinal illness occurring among students at an elementary school in Maplewood. The school nurse reported that 40 students had called in sick. A church festival had taken place on the weekend of May 2 that was widely attended by the school population and their families. A complete school roster and menus for school meals served on May 3 and 4 were obtained. Students were contacted by epidemiologists from MDH and questioned about symptoms and food items eaten at school and at the church festival. A case was defined as a student who became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) on or after May 2. On May 6, a sanitarian from the city of Maplewood inspected the school kitchen and interviewed foodhandlers. Stool samples were collected from two students and submitted to MDH for bacterial and viral testing.

A total of 61 people were interviewed. Of these, 28 (46%) met the case definition. In addition, two students reported vomiting before May 2. Of the 28 cases with onset on or after May 2, 28 (100%) had vomiting, 20 (71%) had cramps, 13 (46%) had fever, 13 (46%) had diarrhea, and one (4%) had bloody diarrhea. Dates of illness onset were May 2 through May 5, with the majority of illness beginning on May 4. The median duration

of illness was 27 hours (range, 0.25 to 44 hours). Cases occurred in all grades (K-8). There was no evidence that attending the church festival or eating any foods at the church festival were associated with illness. Eating lunch on Monday, May 3 was associated with illness; 25 of 28 (89%) cases and 16 of 27 (59%) of controls ate lunch on Monday (odds ratio 5.7; 95% confidence interval, 1.2 to 31.4; $p < 0.01$). However, none of the individual food items served on Monday were associated with illness. The median incubation from Monday lunch was 34.5 hours (range, 5 to 32 hours). No critical foodhandling violations were identified by the sanitarian. No self service food items were reported, and there were no gastrointestinal illness reported in any of the kitchen employees, volunteers, or their families. The two stool specimens tested were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus.

The distribution of clinical signs and symptoms suggests viral gastroenteritis; however, the presence of calicivirus was not confirmed. Illness among students had been occurring previous to May 2. However, the majority of cases had onset on May 4. School lunch on May 3 was associated with illness, but a specific food source was not identified.

(8)

Salmonellosis Associated with Eating at a Restaurant

May

St. Louis County

On June 2, 1999 the Minnesota Department of Health (MDH) notified the St. Louis County Department of Public Health (SLCDPH) that three cases of *Salmonella heidelberg* with the same pulsed-field gel electrophoresis pattern (SH1) identified through statewide active laboratory-based surveillance had reported eating at the same restaurant in Duluth. Meal dates were May 6, May 8, and May 11, and incubation periods were 8 hours, 16 hours, and 48 hours. The two cases with the shorter incubation periods had immunosuppressive medical conditions. Two of the three cases were hospitalized; one for 3 nights and one for 7 nights. SLCDPH contacted infection control practitioners in the Duluth area in an effort to ascertain additional cases. On June 2, an environmental health specialist and an epidemiologist from SLCDPH conducted an inspection of the restaurant. Restaurant managers and food workers were interviewed about illness history, and environmental samples were taken. All food preparation staff were required to submit stool samples for bacterial culture.

Two food workers had stool cultures positive for *Salmonella heidelberg* SH1. One food worker reported onset of illness on May 31, and the other food worker denied any symptoms. Three other food workers had negative stool cultures yet reported illness in either themselves or a family member, with dates of illness onset ranging from sometime in April to June 1. Errors in environmental sample transportation precluded any conclusive environmental testing results. Environmental health inspection revealed numerous violations of time-temperature standards. After failing to correct food code violations found on inspection, the restaurant was closed by SLCDPH on June 9. The restaurant was allowed to reopen on June 18. No specific foods were found to be associated with illness; however, ill food workers and foodhandling violations were identified at the restaurant.

(9)

Viral Gastroenteritis Associated with Hamburger Buns Served at a Barbecue

May

Ramsey County

On June 1, 1999 the Minnesota Department of Health (MDH) was notified by a Woodbury grocery store about a complaint of gastrointestinal illness among guests from a barbecue at a private residence in Maplewood. The grocery store manager was contacted by the host of the barbecue and informed that 45 of 50 people became ill after attending the barbecue on May 22. The host suspected hamburgers purchased at the grocery store were responsible for the illnesses. A list of guests and food items served at the barbecue on May 22 were obtained. Ill guests were contacted by epidemiologists from MDH and questioned about their illness and food items eaten

at the barbecue. A comparison group of guests who were not ill also were contacted and interviewed about food items eaten at the barbecue. A case was defined as a guest who became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after the May 22 event. Stool samples were not available from any of the guests. Samples of meat were tested by the grocery store sanitarian.

A total of 34 guests were interviewed. Of these, twelve (35%) met the case definition. Ten cases (83%) had vomiting, seven (58%) had cramps, six (50%) had diarrhea, two (17%) had fever, and none had bloody diarrhea. Dates of illness onset were from May 23 to May 26. The median incubation was 47 hours (range, 14 to 88 hours). The median duration of illness was 47 hours (range, 11 to 80 hours). Two additional guests reported onset of illness prior to the meal time of the barbecue. One of these two guests also reported additional members of their household who were ill prior to the event as well. Buns were associated with illness (12 of 12 cases vs. 9 of 14 controls; odds ratio, undefined; $p=0.02$). Hamburgers were not associated with illness and the grocery store found no contamination in the samples tested.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. Buns were associated with illness. History of illness among the guests at the time of the event suggests contamination of the buns may have occurred at the event.

(10)

Viral Gastroenteritis Associated with Potato Salad Served at a Graduation Party

June

Wright County

On June 8, 1999 the Minnesota Department of Health (MDH) was notified about gastrointestinal illness occurring among guests who attended a high school graduation party in Buffalo. The barbecue was held for students and their families on June 5 at a private home. Approximately 300 persons attended the party. Complete lists of guests and food items served at the barbecue were obtained. Ill guests were contacted by epidemiologists from MDH and questioned about their illness and food items eaten at the event. A comparison group of guests who were not ill also were contacted and interviewed about food items eaten at the barbecue. A case was defined as any person who had attended the event and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Stool samples were collected from three guests who reported having diarrhea and submitted to MDH for bacterial and viral testing.

A total of 65 people were interviewed. Of these, 25 (38%) met the case definition. Of the 25 cases, 23 (92%) had diarrhea, 19 (75%) had vomiting, 17 (71%) had cramps, 10 (42%) had fever, and one (4%) had bloody diarrhea. Dates of illness onset were June 6 through June 9, with the majority of illness beginning on June 7 (80%). Incubation periods ranged from 25 to 64 hours, with a median of 42 hours. Duration of illness ranged from 24 to 67 hours, with a median of 41 hours. Multiple foods were associated with illness. Twenty-two of 24 cases (92%) and 10 of 29 controls (34%) ate German potato salad (odds ratio [OR], 20.9; 95% confidence interval [CI], 4.3-144.9; $p=0.007$). The German potato salad, which consisted of potatoes, bacon, green onions, and dressing, was made in the home of a guest who attended the barbecue. This person did not report any illness or any illness in her family in the week before the barbecue. Thirteen of 25 cases (52%) and 5 of 29 (17%) controls ate broccoli (OR, 5.2; 95% CI, 1.3-22.6; $p=0.00002$). The broccoli was purchased at a commercial establishment and brought to the barbecue by another guest. When stratified on broccoli consumption, eating German potato salad was significant for those who ate broccoli (OR, 18.0; 95% CI, 1.1-506.1; $p=0.02$) and for those who did not eat broccoli (OR, 20.0; 95% CI, 2.5-461.8; $p=0.01$). Eating broccoli was no longer significant when stratified by German potato salad consumption. All three stool samples collected tested negative for *Salmonella*, *Shigella*, *Campylobacter*, *E. coli* 0157:H7, enterotoxigenic *E. coli*, and calicivirus.

The distribution of clinical signs and symptoms are characteristic of viral gastroenteritis; however, the presence of calicivirus was not confirmed. German potato salad was the implicated vehicle. The guest who brought the

German potato salad did not report any illness or any illness in her family during the week before the barbecue. The source of contamination of the German potato salad was not identified.

(11)

***Clostridium perfringens* Intoxication Associated with a Restaurant**

June

Anoka County

On June 7, 1999 the Minnesota Department of Health (MDH) was notified by the Anoka County Community Health and Environmental Services Department (ACCHEs) of a call from the owner of a restaurant in Coon Rapids. The restaurant owner had received a complaint call from a person who had served a 12-foot club party sub at a birthday party on June 5. Ingredients in the submarine sandwich included bologna, salami, ham, lettuce, tomato, cheese, peppers, and mayonnaise. The caller stated that nine people were ill with gastrointestinal symptoms.

The complainant provided MDH with a list of names and telephone numbers of birthday party attendees that had become ill. The complainant refused to provide the names and telephone numbers of non-ill attendees, insisting that they did not consume any of the sub served at the party. Epidemiologists from MDH interviewed the five ill attendees for whom contact information was available about symptoms and food consumption. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the gathering. On June 7, a sanitarian from ACCHEs conducted an environmental inspection of the restaurant and interviewed employees about illness history. No stool samples were submitted to MDH for testing.

All five attendees interviewed met the case definition. All five (100%) reported diarrhea, two (40%) reported cramps, and one (20%) reported vomiting. The median incubation was 16 hours (range, 10 to 22 hours) and the median duration of illness was 17 hours (range, 10 to 27 hours). No non-ill attendees could be interviewed; therefore, the association between food items and illness could not be evaluated. The sanitarian from ACCHEs interviewed seven restaurant employees; all denied recent gastrointestinal illness. No time-temperature abuse of food was documented by the sanitarian.

The clinical characteristics of this outbreak are consistent with gastroenteritis due to *Clostridium perfringens* intoxication. The meat ingredients of the submarine sandwich would be a plausible vehicle for *C. perfringens*. However, no food vehicle could be statistically implicated as the vehicle of the outbreak because the complainant refused to provide contact information for non-ill attendees.

(12)

***E. coli* O157:H7 Infections Associated with a Picnic**

June

Brown County

On June 16, 1999 an infection control practitioner from a local hospital called the Minnesota Department of Health (MDH) to report a case of hemolytic uremic syndrome (HUS) in a child. Results from a stool sample from this child were pending. The parents of the child were interviewed by MDH epidemiologists with a standard questionnaire to determine possible exposures. The parents reported that several individuals who attended a family picnic on June 5 had subsequently developed diarrhea and that another one of the attendees was seen at an emergency department. The parents were reluctant to provide names of other attendees. Heightened surveillance was done locally by contacting local public health agencies and local hospitals. A second case of *E. coli* O157:H7 infection was reported to the MDH on June 20. This individual had been at the same picnic as the index case. With the reporting of the second case, MDH was able to obtain the names and phone numbers of all picnic attendees. MDH epidemiologists interviewed attendees with a standard questionnaire to document illness, food history, and other potential exposures. A case was defined as a person with diarrhea (≥ 3 loose stools in a

24-hour period) with onset after the picnic or isolation of *E. coli* O157:H7 from stool.

Sixteen people among five families attended the June 5 picnic. Five (31%) people in three separate families met the case definition. Two persons, including the index case, had *E. coli* O157:H7 isolated from stool. These isolates were identical by pulsed-field gel electrophoresis. All five cases reported diarrhea, and two (40%) reported having bloody diarrhea. The onset of symptoms for cases ranged from June 7 through June 11. Consuming sloppy joes served at the picnic was associated with an elevated odds ratio (4 of 5 cases vs. 5 of 11 controls; odds ratio, 4.8; p=0.23). The food preparer stated that the hamburger was thoroughly cooked prior to serving. No foods were statistically associated with illness.

This outbreak of *E. coli* O157 infections occurred at a family picnic. The most likely source of infection was sloppy joes served at the picnic, but this was not confirmed as the vehicle.

(13)

Salmonellosis Associated with a Restaurant

June

Hennepin County

On July 1, 1999 the Minnesota Department of Health (MDH) notified Minneapolis Environmental Health (MEH) that an employee at a Minneapolis restaurant was positive for *Salmonella montevideo*. This case was identified through statewide active laboratory-based surveillance. The manager of this establishment was notified by MEH and told about work restrictions for the ill employee and the importance of proper handwashing among all food service employees. The manager stated that there were no other employees with any symptoms and there had been no customer complaints. On July 2, MDH notified MEH of a case of *Salmonella montevideo* infection identified through routine surveillance who reported eating at the restaurant on June 3. The same day, it was jointly decided by MDH, the Hennepin County Community Health Department, and MEH to interview all employees of this establishment and collect stool samples. All employees of this establishment were interviewed beginning July 2. Stool samples were collected from 39 employees and submitted to the MEH laboratory for bacterial culture. On July 8, MEH sanitarians inspected the restaurant and conducted a food preparation review. Environmental samples were collected from equipment and food contact surfaces and tested at the MEH laboratory.

Five employees reported a history of gastrointestinal illness, with onsets ranging from June 7 through July 2. Nine of 39 employees (23%) tested positive for *Salmonella montevideo*. The isolates from these nine employees had a pulsed-field gel electrophoresis pattern (SMON10) indistinguishable from the isolates from the employee and patron identified through active surveillance. No critical foodhandling violations were identified upon inspection; however, sanitarians noted that the small size of the kitchen prep and utensil washing areas might lead to cross-contamination of food or equipment. Environmental samples tested negative for *Salmonella*.

This was an outbreak of *Salmonella montevideo* infections associated with a restaurant. All employees who tested positive reported eating at the restaurant frequently prior to their illnesses. No food vehicle was identified. The restaurant remained open during the investigation, although *Salmonella*-positive workers were excluded from food service work until they had two negative stool cultures. No additional ill patrons were identified, and there was no evidence of ongoing transmission during or after the investigation.

(14)

Salmonellosis Associated with Commercially Distributed Unpasteurized Orange Juice

June

Multi-County, Multi-State

During June 1999, Public Health - Seattle and King County, the Washington State Health Department, and the Oregon Health Division independently investigated clusters of diarrheal illness attributed to *Salmonella muenchen* infections in each state. Both clusters were associated with commercially distributed unpasteurized orange juice traced to a single processor; this juice was distributed widely in the United States (Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report, 48:582-585). Pulsed-field gel electrophoresis (PFGE) subtype patterns of outbreak isolates were posted on PulseNet. The Minnesota Department of Health Public Health Laboratory received seven isolates of *S. muenchen* through routine surveillance during June. An outbreak-related case was defined as a Minnesota resident with a *S. muenchen* infection after June 1 and whose isolate had a PFGE pattern with no more than three bands difference from the Washington/Oregon outbreak strain. Six of these isolates matched the outbreak pattern or differed by no more than one band. Five of six persons who met the case definition were interviewed regarding travel history and food consumption for the week prior to onset of illness.

Of the five cases interviewed, all five (100%) had diarrhea, cramps, and fever, and two (40%) had bloody stools. Dates of illness onset were June 17 through June 27. Duration of illness ranged from 2 to 6 days, with a median duration of 3.5 days. Two cases reported travel to the southwestern United States during the week prior to illness onset. Four (80%) cases reported consumption of unpasteurized orange juice in the 7 days prior to onset of illness. Unpasteurized juice consumed by the two cases who did not travel outside of Minnesota was traced back to the same source as the cases in Washington and Oregon.

This was a multi-state outbreak of *Salmonella muenchen* infections associated with consumption of commercially distributed unpasteurized orange juice. Six Minnesota cases were identified by PFGE subtyping; exposure to the implicated orange juice was documented in four cases.

(15)

Salmonellosis Associated with a Restaurant

June

Douglas County

During July 1999, the Minnesota Department of Health (MDH) Public Health Laboratory identified through routine surveillance a cluster of isolates of *Salmonella heidelberg* with an indistinguishable pulsed-field gel electrophoresis (PFGE) subtype pattern (SH1). During the same time period, MDH received a call from Douglas County Hospital's Infection Control Practitioner, who had noticed an unusually high number of *Salmonella* cases. Routine interviews of the cases by MDH epidemiologists identified several patrons and an employee of a restaurant in Alexandria. The restaurant chain was contacted, and an investigation was initiated on July 23.

An MDH sanitarian and a Douglas County Environmental Health sanitarian inspected the restaurant, reviewed food preparation procedures, observed clean up of the facility, and interviewed restaurant employees about recent gastrointestinal illness. All restaurant employees were asked to submit stool specimens for *Salmonella* testing. All employees were excluded from work until two consecutive stool specimens obtained at least 24 hours apart tested negative for *Salmonella*. Cases were defined as persons from whom *S. heidelberg* SH1 was isolated and who reported eating at the restaurant prior to the onset of their symptoms or who worked at the restaurant. The restaurant chain initiated environmental sampling with an independent commercial laboratory when they became aware that an employee tested positive for *Salmonella*. Environmental samples were taken three separate times during the investigation.

There were 50 culture-confirmed cases. Of these, 25 were patrons and 25 were employees of the restaurant. Fifteen employees (60%) who tested positive for *S. heidelberg* SH1 were asymptomatic. One additional asymptomatic employee tested positive for *S. newport* and was not counted as a case. Of the 35 symptomatic cases (patrons and employees), all (100%) cases reported diarrhea, 26 (79%) of 33 cases reported fever, eight (24%) of 33 reported vomiting, and eight (26%) of 31 reported bloody stools. The incubation period ranged from 11 hours to 8 days (median, 1.5 days). Known exposure dates ranged from June 15 to July 25. Duration of illness ranged from 1 to 22 days, with a median 10 days. Seven (20%) of 35 symptomatic cases were hospitalized, with a duration of hospital stay ranging from 2 to 9 days (median, 3 days). In addition to the Minnesota cases, the North Dakota Department of Health reported that three North Dakota residents who tested positive for *S. heidelberg* reported eating at the restaurant prior to illness onset. Cases had eaten a variety of foods at the restaurant, including bread bowl salads with chicken, club melt, country fried steak, various egg dishes, various chicken dishes, various sandwiches, meatloaf, pot roast, and hashed browns.

Forty environmental samples were obtained on July 21. Two of the environmental samples, one from a grease trap on the grill and one from a side surface of a water cooler, were positive for *Salmonella*. The restaurant voluntarily closed on July 27 for thorough cleaning. Subsequent environmental samples taken on July 30 and August 6 were all negative. Review of the food preparation procedures identified several potential problem areas. Cross-contamination of bread bowls could have occurred when placed on the same preparation area in which eggs were cracked and prepared. The procedure for preparing the bread bowl salads did not include hand washing between handling frozen raw chicken and putting salad ingredients together. The preparation of the chicken melt allowed for hand contact with the frozen raw chicken strips and other food items without hand washing between steps. The hand washing sink was located in a separate area of the kitchen, rather than on or near the cook line. The cutting board was worn and could have harbored bacteria. As a result of these findings, the restaurant implemented several changes such as using pasteurized eggs for omelets, using tongs to handle raw chicken on the cook line, replacing the cutting boards with new ones, and implementing cleaning of all cutting boards every 4 hours.

This was an outbreak of *Salmonella heidelberg* infections associated with a restaurant in Alexandria. Several of the food preparation procedures could have contributed to contamination of environmental surfaces and foods in the preparation areas, ultimately leading to infection of both food workers and patrons. Because of the number of employees infected and the contamination of surfaces, multiple foods acted as vehicles for patrons.

(16)

Calicivirus Gastroenteritis Associated with Meatballs Served at a Private Gathering

July

Hennepin County

On July 19, 1999 the Environmental Health Division of the City of Bloomington was notified of an outbreak of gastrointestinal illness among guests of a private party. The party was held on July 16 at a banquet hall in Bloomington. All the foods were prepared at the banquet hall. Lists of attendees and foods served were obtained by the City of Bloomington. Individuals were interviewed about food consumption and illness history. A case was defined as a person with vomiting and/or diarrhea after attending the party. Three stool samples were collected and sent to the Minnesota Department of Health for bacterial and viral testing. Organizers for two other events held at the establishment in the preceding 2 days were contacted to ascertain illness among those groups.

Thirteen attendees were interviewed; one attendee was excluded from the analysis due to having unclear information on the interview form. Nine of the remaining attendees (69%) met the case definition. Six (67%) cases reported fever, five (56%) reported vomiting, and four (44%) cases reported diarrhea. The incubation period ranged from 9 to 96 hours, with a median of 38 hours. Duration of diarrhea was 9 to 64 hours, with a median of 40 hours. Eating meatballs was associated with illness in univariate analysis (8 of 8 cases vs. 0 of 2 controls; odds ratio [OR], undefined; 95% confidence interval [CI] lower limit, 1.7; p=0.02). Review of food

preparation revealed that the meatballs were obtained frozen and were baked on a sheet pan. After baking, the meatballs were mixed with sour cream, cinnamon, nutmeg and brown gravy in a bowl. They were then reheated on a “hot box” for 10 to 15 minutes prior to serving. No illnesses were reported among attendees of the two events held the 2 days prior. The three stool samples tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*. One sample tested positive for calicivirus.

This was an outbreak of calicivirus gastroenteritis associated with eating meatballs.

(17)

Viral Gastroenteritis Associated with a Restaurant

July

Washington County

On July 30, 1999 the Washington County Department of Public Health and Environment (WCDPHE) was notified of a group of individuals who developed gastrointestinal illness days after eating at a fast-food restaurant in Cottage Grove on July 28. Lists of menu items served at the restaurant, food workers, and known patrons were obtained. WCDPHE notified all local area clinics, hospitals and health departments about the apparent association of gastrointestinal illness and eating at the restaurant and requested reports of suspect cases. Patrons and food workers were interviewed by WCDPHE investigators about their illness history and food consumption at the restaurant between July 30 and August 3. A case was defined as any person who ate at the restaurant and who subsequently became ill with diarrhea (≥ 3 loose stools in a 24-hour period) or vomiting and an incubation period of 12 hours or greater. One stool specimen was collected from a patron and submitted to the Minnesota Department of Health for bacterial and viral testing.

Eight patrons were interviewed, and seven (88%) met the case definition. One symptomatic individual did not meet the case definition and was excluded from analysis. Four of 7 (57%) cases reported diarrhea and 4 of 7 (57%) cases reported vomiting. None of the cases reported bloody stools. Dates of illness onset were July 29 through August 1. The median incubation period was 44 hours, and the median duration of illness was 34 hours. The stool sample collected from a patron was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus.

During the week of August 2, WCDPHE interviewed restaurant management and employees and conducted a critical control point analysis of the specific food preparation methods in the restaurant. No critical foodhandling violations were noted. One food worker reported being ill on July 29. The employee’s symptoms met the outbreak case definition. The employee’s child had reportedly been ill with similar symptoms the previous week. The ill food worker had prepared a stack of pre-sliced sandwich cheese on July 28. Although the small number of patrons interviewed precluded statistical analysis of food items, five of the seven (71%) cases had consumed sandwich menu items containing sliced cheese from the restaurant.

The clinical and epidemiologic characteristics of this outbreak are consistent with viral gastroenteritis. The vehicle of illness was not identified conclusively; but a plausible vehicle was sliced cheese prepared by a food worker who may have acquired viral gastroenteritis from an ill child at home.

(18)

Calicivirus Gastroenteritis Associated with Salads at a Restaurant

August

Washington County

On August 11, 1999 the Washington County Department of Public Health and Environment (WCDPHE) was notified of a group of individuals who developed gastrointestinal illness after eating at a restaurant in Bayport on

August 7. Lists of menu items served at the restaurant, food workers, and patrons were obtained and WCDPHE requested reports of suspect cases from area health care providers. A case was defined as a person who developed vomiting or diarrhea (defined as ≥ 3 loose stools in a 24-hour period) at least 12 hours after eating at the restaurant, or a person with a positive stool test. One stool specimen was collected from a patron and submitted to the Minnesota Department of Health for viral and bacterial testing.

Ninety-one patrons were interviewed, and 25 (29%) met the case definition. Five individuals had symptoms not meeting the case definition and were excluded from analysis. Twenty cases (80%) had diarrhea, 16 (64%) had cramps, 15 (60%) had vomiting, and 13 (52%) had fever. Dates of illness onset were August 8 through August 11. The incubation period ranged from 19.5 to 101 hours, with a median incubation of 32 hours. Duration of illness ranged from 2 to 76 hours, with a median duration of 34 hours. The stool specimen collected from a patron was positive for calicivirus.

During the week of August 8, WCDPHE interviewed restaurant employees and conducted a food preparation review. Two employees had symptoms that met the case definition, but the onset of symptoms were simultaneous with the onset of patron illnesses. Both employees had consumed food prepared at the restaurant prior to illness. Consuming salads containing lettuce was significantly associated with illness (odds ratio, 14.5; 95% confidence interval, 1.8 to 312.6; $p=0.002$). Food preparation review suggested that a mezclun lettuce mix ("spring mix") was not washed by kitchen staff prior to preparation because the label stated it was pre-washed.

This was an outbreak of calicivirus gastroenteritis associated with lettuce salads served at a restaurant. The source of calicivirus contamination was not identified.

(19)

Salmonellosis Associated with a Restaurant

August

Hennepin County

During August 1999, a cluster of cases infected with *Salmonella typhimurium* pulsed-field gel electrophoresis (PFGE) subtype pattern TM40 was detected by the Minnesota Department of Health through routine laboratory surveillance. The cases had stool specimen collection dates between August 19 and September 8. Cases were interviewed about illness and food consumption history with a standardized questionnaire. Two cases resided in Ramsey County, and three cases resided in Hennepin County.

Onsets of diarrhea occurred from August 15 to September 5. Three of the five cases recalled having eaten at a specific restaurant in Minneapolis prior to the onset of illness. The cases had no other restaurant or food items in common. The cases reporting eating chicken dishes or salad at the restaurant. A sanitarian from the City of Minneapolis interviewed all seven food workers from the restaurant and collected stool specimens from all employees for bacterial testing. None of the employees reported being ill in the weeks prior to the onset of illness in cases. All stool specimens were negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*.

This was an outbreak of *Salmonella typhimurium* PFGE subtype pattern TM40 infections associated with eating at a restaurant in Minneapolis. The specific source of infection was not determined.

(20)

Viral Gastroenteritis Associated with a Restaurant Buffet

August

Ramsey County

On August 23, 1999 the Minnesota Department of Health received complaints of gastrointestinal illness among

three independent groups of coworkers who ate lunch at a restaurant in St. Paul. The first group consisted of 12 people who ate together on August 18. The second group consisted of five people who ate together on August 19, and the third group consisted of two people who ate together on August 20. Lists of persons in each group were obtained. Persons were interviewed about food consumption and illness history by epidemiologists from the St. Paul-Ramsey County Health Department. A case was defined as any person who had lunch at the restaurant and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). A sanitarian from the City of St. Paul Office of License, Inspections, and Environmental Protection inquired about illness among food workers at the restaurant.

Seventeen of twenty-one people (81%) from the three groups were interviewed. Twelve people (71%) met the case definition. Incubation periods ranged from 20.5 to 42.3 hours, with a median of 34 hours. Duration of illness ranged from 0.5 hours to 68 hours, with a median of 36.5 hours. For some cases, illness was ongoing at the time of the interviews. Of the 12 cases, all 12 (100%) reported vomiting, eight (67%) reported diarrhea, and three (27%) reported fever. One person from the group that ate on August 18 submitted a stool sample to a physician. The sample was negative for bacterial and parasitic pathogens but was not tested for viral pathogens.

Eating at the buffet was associated with an elevated risk of illness, but this association was not statistically significant (11 of 12 cases vs. 3 of 5 controls; odds ratio [OR], 7.3; 95% confidence interval [CI], 0.3 to 321; $p=0.55$). Consumption of chile rellenos, an item from the buffet, was associated with illness (7 of 12 cases vs. 0 of 5 controls; OR, undefined; lower limit of 95% CI, 0.8; $p=0.04$). Consumption of either chicken enchiladas, another item from the buffet, or consumption of chile rellenos, also was associated with illness (11 of 12 cases vs. 2 of 5 controls; OR, 16.5; 95% CI, 0.75 to 809; $p=0.05$). There were no illnesses reported among employees; however, individual interviews were not conducted with the employees.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. The outbreak vehicle appeared to be buffet items at a restaurant, including chile rellenos and chicken enchiladas.

(21)

Viral Gastroenteritis Associated with a Catered Lunch

August

Ramsey County

On August 24, 1999 the Minnesota Department of Health (MDH) was notified about gastrointestinal illness occurring among employees of a company that ate a lunch catered by a restaurant in St. Paul on August 19. A complete list of employees who attended the lunch and a complete list of food items served were obtained. Ill employees and a comparison group of non-ill employees were contacted by epidemiologists from MDH and questioned about their illness and food items eaten. A case was defined as any person who had attended the event and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Stool samples were collected from five employees of the company who reported having diarrhea and submitted to MDH for bacterial, viral, and bacterial toxin testing. On August 25, inspection of the restaurant was initiated by a sanitarian from City of St. Paul Office of License, Inspections and Environmental Protection. A list of employees who prepared food for the event was obtained, and employee interviews were conducted by the sanitarian to evaluate foodhandling procedures and illness in employees.

Twenty of 22 persons who ate the lunch were interviewed, and 15 (68%) met the case definition. Of the 15 cases, 14 (93%) had diarrhea, 12 (80%) had vomiting, 11 (73%) had cramps, and seven (47%) had fever. Dates of illness onset were August 20 through August 22, with the majority of illness beginning August 20 (67%). Incubation periods ranged from 19 to 62 hours, with a median of 33 hours. Duration of illness ranged from 23 to 104 hours, with a median of 46 hours. The five stools specimens obtained were negative for bacteria, calicivirus, adenovirus, astrovirus, and rotavirus. However, all five stools samples were collected greater than 72 hours after

diarrhea resolved. On univariate analysis, no individual food items were associated with illness. Antipasto had an elevated odds ratio but the association was not statistically significant (8 of 9 cases vs. 7 of 11 controls; odds ratio, 4.6; 95% confidence interval, 0.32-252.7; p=0.22).

When interviewed by the sanitarian, one foodhandler reported illness starting August 19 during his shift, and also reported that a family member had diarrhea earlier that week. The employee was responsible for the preparation of the antipasto salad. Therefore, the source of contamination was likely handling of raw ingredients for the antipasto salad by the ill foodhandler. At the time of the inspection, the employee was no longer symptomatic, so a stool sample was not obtained.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. No food items had a statistically significant association with illness. However, cumulative evidence suggests that the outbreak was due to consumption of antipasto salad prepared by an ill foodhandler.

(22)

Viral Gastroenteritis Associated with a Church Potluck

September

Ramsey County

On September 21, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a potluck at a church in St. Paul on September 12. A list of potluck attendees was obtained, and attendees were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the potluck. No stool samples were collected.

Forty-eight (60%) of 80 attendees were interviewed. Six attendees were excluded from analysis because they had gastrointestinal symptoms but did not meet the case definition. Of the remaining 42 attendees, 20 (48%) met the case definition. Seventeen (85%) cases had diarrhea, 16 (80%) had vomiting, and six (30%) had fever. Dates of illness onset were September 12 through September 18. The incubation period ranged from 3 to 139 hours, with a median of 39 hours. Duration of illness was 16 to 101 hours, with a median of 50 hours. Two persons who prepared foods reported gastrointestinal illness during the 5 days preceding the potluck. A person with a 3 hour incubation period also prepared foods. Ice (12 of 20 cases vs. 3 of 22 controls; odds ratio [OR], 9.5; 95% confidence interval [CI], 1.7 to 59; p=0.002), potato salad (7 of 13 cases vs. 0 of 22 controls; OR, undefined; lower limit of 95% CI, 2; p=0.003), and brownies (7 of 20 cases vs. 2 of 20 controls; OR, 5.4; 95% CI, 0.8 to 59; p=0.05) were associated with illness in univariate analysis. Meatballs (15 of 20 cases vs. 10 of 22 controls; OR, 3.6; 95% CI, 0.8 to 17; p=0.051), lasagna (8 of 20 cases vs. 3 of 22 controls; OR, 4.2; 95% CI, 0.8 to 29; p=0.052), and lemonade (9 of 20 cases vs. 4/22 controls; OR, 3.7; 95% CI, 0.8 to 20; p=0.06) approached statistical significance. In a stepwise regression model selection, ice remained associated with illness.

The epidemiologic and clinical features of this outbreak are characteristic of viral gastroenteritis. Statistical evidence implicated ice as the most likely vehicle, but it is possible that other foods were contaminated as well.

(23)

Viral Gastroenteritis Associated with a Catered Lunch

September

Hennepin County

On September 24, 1999 the Minnesota Department of Health (MDH) was notified about gastrointestinal illness occurring among employees of a company that attended a meeting in Minnetonka from September 22 to September 23. The meals were catered by several restaurants. A complete list of employees who attended the meeting and a complete list of food items served were obtained. Ill employees and a comparison group of non-ill

employees were contacted by epidemiologists from MDH and questioned about their illness and food items eaten. A case was defined as any person who had attended the meeting and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Stool samples could not be obtained from any of the employees.

Eleven of 15 persons who attended the meeting were interviewed, and five (45%) met the case definition. Of the five cases, five (100%) reported diarrhea, four (80%) reported vomiting, four (80%) reported cramps, and one (20%) reported fever. Dates of illness onset were September 23 and September 24, with the majority of illness beginning September 24 (80%). Duration of illness ranged from 21 to 50 hours, with a median of 33 hours. There were no reports of illness in employees before or during the meeting. Univariate analysis showed that no individual food items had a statistically significant association with illness. However, eating cantaloupe (4 of 5 cases vs. 1 of 3 controls; odds ratio=8.0; 95% confidence interval, 0.24 -289; $p=0.28$) served by one caterer for lunch on September 22 had an elevated odds ratio. The lack of a statistically significant association between illness and any of the food items was likely due in part to the small number of cases and controls interviewed. Foodhandlers employed by the caterer were not interviewed regarding illness history.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. A specific food vehicle could not be confirmed. Individuals who ate cantaloupe had an elevated risk of illness, but cantaloupe could not be confirmed as the vehicle; this was likely due to the small number of people enrolled in the case-control study.

(24)

Viral Gastroenteritis Associated with Salads Served at a Birthday Party

September

Polk County

On September 27, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a birthday party on September 25 at a private residence in Mentor. All foods were prepared at the home from store-bought ingredients. Lists of party attendees and foods served were obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the birthday party. No stool samples were collected for testing.

Twenty-three attendees were interviewed, and 16 (70%) met the case definition. Twelve cases (75%) had vomiting, 11 (69%) had diarrhea, eight (50%) had fever, and one (6%) had bloody stools. The incubation period ranged from 4 to 34 hours, with a median of 27 hours. Duration of illness ranged from <1 hour to 41 hours, with a median of 41 hours. Macaroni salad (16 of 16 cases vs. 3 of 7 controls; odds ratio [OR], undefined; 95% confidence interval [CI] lower limit, 2.1; $p=0.004$) and fruit salad (14 of 16 cases vs. 2 of 7 controls; OR, 17.5; 95% CI, 1.4 to 267; $p=0.01$) were associated with illness.

The clinical and epidemiological characteristics of this outbreak are consistent with viral gastroenteritis. Illness was associated with macaroni salad and fruit salad. The source of contamination was not identified but may have been a child who became ill with gastrointestinal symptoms shortly after the meal.

(25)

Listeriosis Associated with Deli Meats

September-December

Olmsted County

During October-December, 1999, the Minnesota Department of Health (MDH) Public Health Laboratory received five *Listeria monocytogenes* isolates which had an identical pulsed-field gel electrophoresis (PFGE)

subtype (LAS3). All five cases resided in Rochester. A case was defined as a Minnesota resident who had a culture-confirmed infection with *Listeria monocytogenes* PFGE subtype LAS3. Cases or their proxies were interviewed about illness history and food consumption during the 30 days prior to onset of illness by epidemiologists from MDH. Inspection of the implicated deli and testing of the environment and of food products from the implicated deli were done by the Minnesota Department of Agriculture. Environmental and food isolates were subtyped by PFGE at the MDH Public Health Laboratory.

All five cases or their proxies were interviewed. Three (60%) of the cases were female. The ages of cases were 6, 55, 61, 76, and 87 years. Two cases had documented immunosuppressive conditions: one case had lung cancer and metastatic liver disease and another case had chronic liver disease and was awaiting a liver transplant. *Listeria* isolates were from blood in four patients and from peritoneal fluid in the fifth patient (the patient awaiting the liver transplant). Dates of illness onset ranged from September 30 to approximately October 25. All five cases were hospitalized. One patient (the lung cancer patient) died from the *Listeria* infection 4 days after being admitted to the hospital because of an acute febrile illness. All five cases had consumed meat products from the same grocery store deli in Rochester during the 30 days preceding their onset of illness. These products included a variety of deli meats; no single product was reported as being consumed by all cases. On November 3, the Minnesota Department of Agriculture collected food and environmental samples from the deli for culture. *L. monocytogenes* LAS3 was recovered from opened packages of three different deli meats and from two environmental samples. An additional environmental sample yielded an isolate closely related to the outbreak strain. The positive meats included honey ham, fat free turkey breast, and turkey pastrami. These products originated in three different processing plants and were shipped to the grocery store by two different distributors. On November 11, the grocery store voluntarily closed the deli, discarded products from the shelves, recalled luncheon meats sliced and packaged at the luncheon and cheese island, and sanitized the deli area. Testing of intact packages of luncheon meats from the grocery store did not yield any *L. monocytogenes* isolates.

This outbreak of listeriosis was due to consumption of sliced meats from a deli. Contamination with the outbreak strain of *L. monocytogenes* in the deli was widespread. *Listeria* was likely introduced into the deli via a contaminated product and subsequently spread throughout the deli, but the original source product could not be determined.

(26)

Gastroenteritis Associated with Bacon Served at a Conference

October

Ramsey County

On October 13, 1999 the Minnesota Department of Health (MDH) was notified of gastrointestinal illness among persons who attended a conference for state employees at a conference center in St. Paul on October 6 and 7. Lists of conference attendees were obtained and a random sample of individuals was interviewed in a case control study conducted by MDH epidemiologists. In addition, an email was broadcast to state employees asking they contact MDH if they attended the conference and subsequently became ill. Attendees were interviewed about food consumption at the reception and banquet as well as about illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the conference. Five stool samples were collected from ill individuals for bacterial, toxin, and viral testing; however, all persons had recovered by the time samples were collected. Sanitarians from the City of St. Paul inspected the food service facilities and obtained a list of food workers. MDH epidemiologists attempted to interview all food workers who prepared or served food at the conference.

Ninety-five attendees were interviewed. Forty-three persons were contacted in the case-control study, and 52 contacted MDH in response to the email announcement. Twenty persons were excluded from the analysis because, although ill, they did not meet the case definition. Nine (26%) of 35 persons in the case-control investigation met the case definition. Six of 27 (22%) persons who attended the conference only on Wednesday

met the case definition, and four of 13 (31%) persons who attended the conference only on Thursday reported illness. Thirty-nine persons who contacted MDH in response to the email met the case definition. These persons were not included in the attack rate estimate, but their illness histories were used in characterizing the illness. Forty-six (96%) of 48 cases had diarrhea, 12 (26%) of 46 cases had fever, eight (17%) of 41 cases had vomiting, and seven (15%) of 48 cases had bloody stools. The incubation period ranged from less than 1 hour to 219 hours, with a median incubation among Wednesday-only attendees of 5 hours and among Thursday-only attendees of 11 hours. Duration of illness ranged from 2 hours to 2 weeks, with a median duration among Wednesday-only attendees of 34 hours and among Thursday-only attendees of 46 hours. All stool specimens tested negative for *Salmonella*, *Shigella*, *E. coli* O157:H7, diarrheagenic *E. coli*, *Campylobacter*, *S. aureus*, *C. perfringens*, *B. cereus*, and calicivirus.

Bacon served on a club sandwich (odds ratio [OR], undefined; lower 95% confidence interval [CI], 1.98) was statistically associated with illness. This item was served only on Thursday; no foods served on Wednesday were associated with illness. Grapes (OR, 10; 95% CI, 0.63 - 337) which were also served on Thursday, had an elevated risk for illness but were not statistically significant. None of the seven wait staff or food workers interviewed reported illness in themselves or in members of their households in the week prior to the event. One food worker who helped prepare cold foods, including the bacon associated with illness, could not be interviewed. The investigating sanitarian identified no violations that appeared to be related to the outbreak.

This foodborne outbreak was associated with attending a 2-day conference. Illness occurred among persons who attended on both days. The etiologic agent was not identified, possibly because stool samples were collected from persons after their symptoms had resolved. Bacon was statistically associated with illness, but whether the bacon was contaminated before preparation or by a food worker was not determined.

(27)

Gastroenteritis Associated with Vegetarian Spring Rolls Served at a Banquet

October

Hennepin County

On October 7, 1999 the Minnesota Department of Health (MDH) was notified of gastrointestinal illness among persons who attended a banquet at a hotel in Minneapolis on October 7. A list of banquet attendees was obtained and individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the banquet. The employer that sponsored the banquet broadcast a fax to employees requesting anyone who attended the banquet and subsequently became ill contact MDH. These persons were not included in the attack rate estimate. One person submitted a stool sample for toxin, viral, and bacterial testing, including diarrheagenic *E. coli*; the specimen was collected 2 days after the person's symptoms had resolved. On October 15, a sanitarian from the Minneapolis Division of Environmental Health inspected the kitchen facilities and interviewed the chef about food preparation for the banquet.

Sixty-four attendees were interviewed, and 55 were included in the analysis. Three of five persons (60%) who called in response to the broadcast fax and seven (14%) of 51 persons in the case-control study met the case definition. All ten cases had diarrhea, one (10%) had vomiting, and one (10%) had fever. The incubation period ranged from 1.5 hours to 71 hours, with a median of 7 hours. Duration of illness ranged from 4 hours to 6 days, with a median of 44 hours. The stool specimen was negative. Consumption of vegetarian spring rolls (7 of 10 cases vs. 15 of 44 controls; odds ratio, 5.2; 95% confidence interval, 1 to 30; $p=0.02$) at the reception was associated with illness. The sanitarian identified no critical violations during the inspection and food preparation review. The spring rolls had been deep fried and were held in chafing dishes for less than 1 hour before being served at the reception.

An outbreak occurred among guests at a large dinner held in a hotel banquet facility. Illness was associated with

vegetarian spring rolls served at the pre-dinner reception. The etiologic agent and source of contamination of the spring rolls are unknown.

(28)

Viral Gastroenteritis Associated with a Wedding Reception

October

Ramsey County

On October 12, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a wedding reception. The wedding reception was held October 10 at a civic organization in New Brighton with a full food service for functions. A list of attendees and foods served was obtained, and attendees were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the wedding reception. A sanitarian from the City of New Brighton inspected the facility. Only one person was involved in food preparation. The foodhandler was interviewed and submitted a stool sample for bacterial and viral testing.

Thirty attendees were interviewed. Three attendees were excluded from analysis because they had mild gastrointestinal symptoms that did not meet the case definition. Twenty-one (78%) of the 27 remaining attendees met the case definition. Nineteen (91%) cases had diarrhea, 17 (81%) had vomiting, 12 (57%) had fever, and one (5%) had bloody stools. The incubation period ranged from 21 to 48 hours, with a median of 32 hours. Duration of illness ranged from 16 to 117 hours, with a median of 29 hours. No foods were statistically associated with illness. However, the foodhandler was ill with gastrointestinal symptoms the day prior to the event. Food for the event was prepared on the day of the event and on the previous day. Many foods, such as sliced fresh fruit and pickles arranged on a platter, required direct hand contact during preparation. The stool sample from the foodhandler tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, *Campylobacter*, *Staphylococcus aureus*, *Bacillus cereus*, and calicivirus.

The epidemiologic and clinical characteristics of this outbreak are consistent with viral gastroenteritis. No specific food vehicle was identified, but preparation of cold food items by an ill foodhandler was documented.

(29)

***Staphylococcus aureus* Intoxication Associated with a Restaurant**

October

Stearns County

On October 15, 1999 the St. Cloud City Health Department (SCCHD) was notified by a high school athletics official that a number of football players became ill after eating a team meal at a restaurant in St. Cloud on the afternoon of October 14. An investigation was begun by the SCCHD and the Minnesota Department of Health (MDH), with assistance from Stearns County Community Health (SCCH) staff. A list of team members and staff was provided by the school. Parental permission was obtained before conducting interviews with minor children. For the purpose of this investigation, a case patient was defined as a person who experienced vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after eating at the restaurant. The establishment was inspected the afternoon of October 15. Food service workers were observed during food preparation, and current or recent illness histories were obtained. A complete menu of food items available to the team was compiled. A partial list of patrons eating before and after the team was obtained from available business records. Five stool samples and three food samples were submitted to the MDH Public Health Laboratory for testing.

Seven of 30 persons (23%) interviewed met the case definition. Of those, five (71%) experienced vomiting and five (71%) reported diarrhea. The median incubation period was 5 hours, with a range of 2.5 to 6.5 hours.

Recovery time was 24 hours or less. Eight persons not meeting the case definition complained of cramps or nausea. All seven persons meeting the case definition went through the salad bar line with the first half of the team. Statistical analysis of foods served found macaroni salad (2 of 7 cases vs. 0 of 23 controls; odds ratio, undefined; $p=0.048$) and Italian pasta salad (3 of 7 cases vs. 0 of 23 controls; odds ratio, undefined; $p=0.009$) to be significantly associated with illness.

Five stool samples collected from ill persons were negative for *Salmonella*, *E. coli* O157:H7, *Shigella*, *Campylobacter*, enterotoxigenic *Staphylococcus aureus*, *Bacillus cereus*, *Clostridium perfringens*, and calicivirus. Food samples taken from the serving line at a later date revealed no growth from the Italian pasta; positive *Pseudomonas*, *Lactobacillus*, *Bacillus*, and coagulase-negative *Staphylococcus* species from frozen peas, with a total plate count of 18,000,000 organisms per gram sample, and from hard-boiled chopped eggs at 3,200,000 organisms per gram sample. An environmental inspection found food holding and storage temperatures adequate. Recommendations were made concerning the washing and preparation of fresh fruits and vegetables and inventory rotation. No food service workers reported illness. No patrons eating before or after the team on October 14 were found to have been ill.

The epidemiologic and clinical characteristics of this outbreak are consistent with gastroenteritis caused by *Staphylococcus aureus* intoxication. Macaroni and Italian pasta salads were implicated as the most likely vehicles of transmission. The seven cases ate during the first group of team members served; therefore it is possible that the contaminated food was available only to the first members going through the food line until it was used up or replenished with new product. The presence of coagulase-negative *Staphylococcus* in two food samples taken from the salad bar at a later date indicates the potential for contamination of food products by workers during preparation or by patrons while utilizing the salad bar.

(30)

Calicivirus Gastroenteritis Associated with a Catered Lunch

October

Hennepin County

On October 22, 1999 Hennepin County Environmental Health (HCEH) received a call from an office regarding gastrointestinal illness in a group who had eaten a catered meal at the office's Delano facility. The lunch was served on October 20. It was delivered by a restaurant in Maple Plain. The food was served buffet style. The soup choices (cream of asparagus and beef barley) were served in individual containers, as were the sandwiches (ham, turkey, and chicken salad) with chips. Cookies were also served. Beverages were in individual cans. No ice was served. Lists of attendees and foods served were obtained by HCEH, and attendees were interviewed about food consumption and illness history. A case was defined as a person with vomiting or diarrhea (≥ 3 stools in a 24-hour period) after the lunch.

Twenty persons ate the lunch. Eleven (55%) attendees were interviewed. Nine of 11 (82%) met the case definition. Symptoms were diarrhea (78%), vomiting (67%), cramps (67%), nausea (55%), headache (44%), and fever (33%). The median incubation period was 38 hours (range, 29.5 to 53 hours). Statistical analysis of food items was not performed because of the small number of cases and controls. There were only two employees working at the restaurant when the catered food was prepared. According to the owner, the cook who prepared the food had reported a gastrointestinal illness several days before preparing the food. When the two employees were interviewed, the cook reported having cramps on October 16 and the wait staff reported gastrointestinal symptoms on October 17. Stool cultures were obtained on the two employees and submitted to the Minnesota Department of Health for bacterial, toxin, and viral testing. The stool specimen from the wait staff was positive for calicivirus.

This was an outbreak of calicivirus associated with a catered lunch. The vehicle of the outbreak could not be

determined, but the source of the outbreak was likely contamination of food by an ill or convalescent food worker.

(31)

Calicivirus Gastroenteritis Associated with Sandwiches from a Restaurant

October

Ramsey County

On November 5, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among 47 persons who attended a work-related potluck on October 28. Foods consumed at the event consisted of items prepared by attendees and items catered by a restaurant in St. Paul. Lists of potluck attendees and foods served were obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the potluck. One stool sample was collected and submitted to MDH for bacterial and viral testing. The restaurant was inspected and a manager was interviewed about illness history among restaurant employees by a sanitarian from the City of St. Paul Office of License and Inspection.

Thirty-nine (83%) of 47 attendees were interviewed; two attendees were excluded from analysis because they had gastrointestinal symptoms but did not meet the case definition. Of the remaining 37 attendees, 18 (49%) met the case definition. Fifteen (83%) cases had diarrhea, nine (50%) had vomiting, and seven (39%) had fever. Dates of illness onset were October 28 through October 31. The incubation period ranged from 2 to 80 hours, with a median of 31 hours. Duration of illness was 13 to 111 hours, with a median of 38 hours. Submarine sandwiches catered from a restaurant were associated with illness (17 of 17 cases vs. 14 of 19 controls; odds ratio [OR], undefined; 95% confidence interval [CI] lower limit, 0.92; $p=0.03$). Several submarine sandwich ingredients also were associated with illness, including wheat bread (7 of 8 cases vs. 1 of 6 controls; OR, 35; 95% CI, 1.2 to 1881; $p=0.02$), cheese (5 of 5 cases vs. 1 of 6 controls; OR, undefined; 95% CI lower limit, 1.4; $p=0.01$), and pickles (10 of 12 cases vs. 6 of 15 controls; OR 7.5; 95% CI, 0.96 to 87; $p=0.03$). None of the foods prepared by attendees were associated with illness. The stool sample tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*, but was positive for calicivirus. The restaurant manager interviewed by a sanitarian from City of St. Paul Office of License and Inspection was not aware of any employee illnesses. Individual employees were not interviewed.

This was an outbreak of calicivirus gastroenteritis associated with eating sandwiches from a restaurant. The potential role of restaurant employee illness was not adequately addressed.

(32)

Viral Gastroenteritis Associated with a Restaurant

October

Stearns County

On November 1, 1999 the St. Cloud City Health Department (SCCHD) was notified that a group of people attending a birthday gathering had become ill after eating at a restaurant in St. Cloud on October 29. A birthday cake was also brought into the restaurant from an outside source. An investigation was begun by SCCHD and Minnesota Department of Health (MDH) staff. A list of persons who attended the gathering at the restaurant was obtained. Lists of foods and beverages served during the event was provided by the establishment. Many of those at the birthday gathering at the restaurant also attended a party at a private residence the following evening, October 30. Therefore, lists of attendees and food items served for the event on October 30 were also obtained. Persons were interviewed and evaluated with respect to the following independent events: (1) the October 29 restaurant meal; (2) consumption of birthday cake brought to the restaurant; and (3) the gathering at a private residence on October 30. A case was defined as a person who experienced vomiting or diarrhea (≥ 3 loose stools

in a 24-hour period) after eating at the establishment. Five stool samples were collected and submitted to the MDH Public Health Laboratory. The establishment was inspected by SCCHD on November 1. Food service workers were observed during food preparation and serving. Employees were interviewed to obtain current or recent illness histories.

Eleven (58%) of 19 persons from the birthday group eating at the restaurant met the case definition. Two additional patrons and one food service worker also met the case definition. Of the eleven cases from the birthday group, eight (73%) had diarrhea, seven (64%) had vomiting, and six (55%) had fever. The median incubation period from the meal at the restaurant was 38.5 hours, with a range of 30.5 to 58.5 hours. Recovery time could not be determined because most of the cases were still ill when interviewed. Neither consumption of birthday cake brought into the establishment nor attendance at the October 30 party at the private residence was statistically associated with illness. Four individuals who attended the party at the private residence but who did not attend the birthday gathering at the restaurant did not become ill. In addition, a restaurant employee and two restaurant patrons (a married couple) who did not attend the birthday gathering or the party on October 30 reported illness. The two restaurant patrons had incubation periods of 38.5 hours and 58.5 hours, respectively, after eating at the restaurant; the first case reported vomiting with no diarrhea, and the second case reported diarrhea. The restaurant employee worked on October 29 as a hostess. The worker became ill with vomiting and diarrhea with onset on October 30 at 8:00 a.m. The illness lasted until November 2.

Consumption of any beverage at the restaurant was significantly associated with illness (11 of 11 cases vs. 3 of 8 controls; odds ratio [OR], undefined; $p = 0.005$). However, a specific beverage could not be implicated as the source of illness. The following items, although not significantly associated with illness, approached significance with the following probabilities: consumption of "hot bar" items (11 of 11 cases vs. 5 of 8 controls; OR, undefined; $p=0.06$) consumption of a main entree item (10 of 11 cases vs. 4 of 8 controls; OR, 10.0; 95% confidence interval, 0.61-337; $p=0.07$) or consumption of any fresh fruit item (4 of 11 cases vs. 0 of 8 controls; OR, undefined; $p=0.09$). Of the five stool samples collected, five were negative for *Salmonella*, *Shigella*, *Campylobacter*, *E. coli* O157:H7, and calicivirus. One stool was positive for *Staphylococcus aureus* with staphylococcal enterotoxin present. Another stool was positive for *Clostridium perfringens* and *Staphylococcus aureus* with staphylococcal enterotoxin not present.

There was no indication that the birthday cake brought into the establishment or the party held at a private residence on October 30 were associated with illness. Rather, the outbreak was due to a birthday meal served at the restaurant. The mode of transmission may have involved multiple foods or beverages. The finding of two ill, non-birthday group patrons who became ill with similar symptoms and onset times further strengthens the observations that food or beverages consumed at the restaurant caused the outbreak. The distribution of incubation periods and clinical signs in cases is consistent with viral gastroenteritis. The food worker developed illness compatible with viral gastroenteritis prior to the ill patrons and approximately 13 hours after the implicated birthday meal. It is possible that the food worker was involved with transmission of virus to patrons; however, this was not firmly established. The positive findings of enterotoxigenic *S. aureus* and *C. perfringens* in stool samples submitted by patrons appears to have been a coincidental finding.

(33)

Viral Gastroenteritis Associated with Cold Food Items Served at a Restaurant

November

McLeod County

On November 19, 1999 the Minnesota Department of Health (MDH) was notified about gastrointestinal illness occurring among persons who ate at a restaurant in Hutchinson on November 1. A partial list of patrons and a complete menu of food items served at the restaurant were obtained. Ill persons and a comparison group of non-ill restaurant patrons were contacted by epidemiologists from MDH and questioned about their illness and food

items eaten at the restaurant. A case was defined as any person who had attended the event and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). No persons were symptomatic at the time of the investigation, so stool specimens were not collected.

On November 21, inspection of the restaurant facilities were initiated by a sanitarian from the MDH Division of Environmental Health. A list of employees who worked at the event was obtained, and employee interviews were completed by the sanitarian to evaluate foodhandling procedures and illness in employees. Twenty persons who ate at the restaurant on November 1 were interviewed, and 12 (60%) met the case definition. Of the 12 cases, ten (83%) had vomiting, nine (75%) had diarrhea, six (50%) had cramps, and six (50%) had fever. Dates of illness onset were November 2 through November 7, with the majority of illness beginning November 2 (67%). Incubation periods ranged from 12 to 155 hours, with a median of 35 hours. Duration of illness ranged from 17 to 84 hours, with a median of 43 hours.

No individual entrees were associated with illness on univariate analysis. However, multiple raw ingredients served with the hamburger and salad entrees were associated with illness. Ten of 12 cases (83%) and 3 of 8 controls (38%) reported eating lettuce with their entree (odds ratio [OR], 8.3; 95% confidence interval [CI], 0.74 to 117; $p=0.05$). Eight of 11 cases (73%) and two of eight controls (25%) reported eating tomatoes with their entree (OR, 8.0; 95% CI, 0.73 to 112; $p=0.05$). Seven of 11 cases (64%) and one of eight controls (13%) reported eating onions with their entree (OR, 12.3; 95% CI, 0.85 to 629; $p=0.04$). Cut chicken served in salads was also associated with illness (5 of 11 cases vs. 0 of 7 controls; OR, undefined; lower limit of 95% CI, 0.96; $p=0.05$). The MDH Environmental Health sanitarian interviewed four employees from the restaurant who worked October 30 through November 1. The cook reported illness starting November 2 but reported not working while symptomatic. However, before work on November 1, two of the cook's family members were ill with vomiting and diarrhea. The source of contamination was likely handling of raw ingredients for the hamburger and salad entrees by the cook with ill family members. At the time of the inspection, the cook was no longer symptomatic, so stool samples were not obtained.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. The outbreak was associated with consumption of cold food items served with hamburger and salad entrees that were handled by a food worker with ill family members.

(34)

Calicivirus Gastroenteritis Associated with a Meal Catered by a Deli

November

Anoka County

On November 9, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a birthday party at a private residence on November 4. Foods consumed at the party consisted of sandwich rings purchased at a deli in Anoka and other store-bought foods. Lists of party attendees and foods served were obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the birthday party. Four stool samples was collected and submitted to MDH for bacterial and viral testing. The deli was inspected and the foodhandler who prepared the sandwiches was interviewed about illness history by an inspector from the Minnesota Department of Agriculture, Dairy and Food Inspection Division.

Twenty-six (90%) of 29 attendees were interviewed. One person was excluded from the analysis because they had gastrointestinal symptoms but did not meet the case definition. Eleven (44%) of the remaining 25 attendees met the case definition. Ten (91%) cases had diarrhea, nine (82%) had vomiting, and five (46%) had fever. The incubation period ranged from 15 to 101 hours, with a median of 34 hours. Duration of illness ranged from 24 to

44 hours, with a median of 35 hours. The deli sandwiches approached a statistically significant association with illness (11 of 11 cases vs. 10 of 14 controls; odds ratio [OR], undefined; 95% confidence interval [CI] lower limit, 0.56; $p=0.08$). However, several sandwich ingredients were associated with illness, including lettuce (11 of 11 cases vs. 5 of 13 controls; OR, undefined; 95% CI lower limit, 2.4; $p=0.002$), onions (7 of 10 cases vs. 2 of 14 controls; OR, 14.0; 95% CI, 1.4 to 181; $p=0.008$), tomatoes (10 of 11 cases vs. 5 of 13 controls; OR, 16.0; 95% CI, 1.3 to 779; $p=0.01$), ham (11 of 11 cases vs. 9 of 14 controls; OR, undefined; 95% CI lower limit, 0.84; $p=0.04$), turkey (11 of 11 cases vs. 8 of 14 controls; OR, undefined; 95% CI lower limit, 1.2; $p=0.02$), Swiss cheese (10 of 11 cases vs. 7 of 14 controls; OR, 10.0; 95% CI, 0.86 to 495; $p=0.04$), and poppy seed bread (11 of 11 cases vs. 9 of 14 controls; OR, undefined; 95% CI lower limit, 0.84; $p=0.04$). Ice was also associated with illness (11 of 11 cases vs. 3 of 14 controls; OR, undefined; 95% CI lower limit, 4.8; $p<0.0001$). All stool samples tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*, but two were positive for calicivirus. The deli employee who prepared the sandwiches reported not being ill and not having family members who were ill.

This was an outbreak of calicivirus gastroenteritis. Sandwich ingredients and ice were associated with illness.

(35)

Viral Gastroenteritis Associated with Cold Sandwiches Served at a Restaurant

November

McLeod County

On November 16, 1999 the Minnesota Department of Health (MDH) was notified about gastrointestinal illness in five of six persons who ate lunch together at a restaurant in Hutchinson on November 12. From November 16 to November 19, MDH received five separate reports of illness after eating lunch at the same restaurant on November 12. A complete phone list of the groups reporting illness was obtained. Patrons were contacted by MDH epidemiologists and interviewed about illness and food history. Food workers at the restaurant were interviewed by a MDH sanitarian and an epidemiologist from the MDH district office. A case was defined as someone who became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after eating at the restaurant. Stool samples from two patrons and seven restaurant employees were tested for *Salmonella*, *Shigella*, *E. coli* O157:H7, *Campylobacter*, and calicivirus. The stool sample from one patron was collected more than 24 hours after the person's symptoms had resolved, and the other patron sample was collected more than 4 days after symptoms had resolved.

Thirty-four persons were interviewed, and 19 (56%) met the case definition. All 19 cases had diarrhea, 14 (74%) had vomiting, 12 (63%) had abdominal cramps, and four (21%) had fever. Incubation periods ranged from 23 to 52 hours, with a median incubation of 36 hours. The median duration of illness ranged from 11 to 89 hours with a median of 37 hours. Two food workers reported illness with gastrointestinal symptoms during the week prior to the outbreak. All stool samples tested negative for *Salmonella*, *Shigella*, *Campylobacter*, *E. coli* O157:H7, enterotoxigenic *E. coli*, and calicivirus. One stool sample from an employee tested positive for non-pathogenic *Yersinia enterocolitica*. This laboratory result was likely unrelated to the outbreak. Eating cold sandwiches (odds ratio, undefined; 95% confidence interval, 1.4 - 2.9; $p < 0.05$) was associated with illness.

The clinical and epidemiologic profile of this outbreak is characteristic of viral gastroenteritis. The stool samples may have tested negative for calicivirus because they were collected after resolution of symptoms. Cold sandwich items were likely contaminated by bare hand contact with ready-to-eat foods by food workers shedding the virus.

(36)

Calicivirus Gastroenteritis Associated with a Birthday Party

November

Dakota County

On November 18, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a birthday gathering on November 14. The celebration consisted of a mid-afternoon reception at a community center, followed by a dinner at a private residence in Rosemount. Fifty-seven people were invited to the reception, 20 of whom were also invited to the dinner. Foods served included homemade and store-bought items. Lists of attendees and foods served during the reception and dinner were obtained. Persons were interviewed about food consumption and illness history by epidemiologists from MDH. A case was defined as any person who had attended the reception or dinner or ate foods from those events and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Five stool samples were collected for bacterial and viral pathogen testing.

Forty-five guests were interviewed. In addition, one person who did not attend the celebrations but ate foods brought home from the event was interviewed. One person, a child, was excluded from the analysis due to becoming ill with gastrointestinal symptoms during dinner. Fifteen persons (33%) met the case definition. Thirteen of the 15 cases (87%) reported diarrhea, 12 of 14 (86%) reported vomiting, and one of 13 (8%) reported fever. Dates of illness onset were November 14 through November 18. Incubation periods ranged from 9 to 90 hours, with a median of 38 hours. Duration of illness ranged from 15 to 77 hours, with a median of 35 hours. The five stool samples tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*, but all five were positive for calicivirus. Eating foods from the dinner was significantly associated with illness (13 of 15 cases vs. 4 of 30 controls; odds ratio [OR], 42; 95% confidence interval [CI], 5.6 to 455; $p < 0.001$). Among persons who ate foods from the dinner, eating red grapes was associated with illness (8 of 11 cases vs. 0 of 4 controls; OR, undefined; 95% CI lower limit, 0.81; $p = 0.04$).

This outbreak of calicivirus gastroenteritis was associated with eating foods from the dinner party. Red grapes from the dinner were associated with illness. A child who became ill at the event was the most plausible source of contamination.

(37)

***Staphylococcus aureus* Intoxication Associated with Potato Salad Served at a Wedding Reception**

December

Crow Wing County

On December 13, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a wedding reception on December 11 at a church in Deerwood. Foods were prepared by family members. Lists of attendees and foods served were obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the wedding reception. One stool sample was collected and tested for bacterial and viral pathogens.

Forty-four attendees were interviewed. Six attendees were excluded from analysis because they had gastrointestinal symptoms but did not meet the case definition. Of the remaining 38 attendees, 21 (55%) met the case definition. Twenty-one (100%) cases had diarrhea, 18 (86%) had vomiting, and four (19%) had fever. The incubation period ranged from 1 to 9 hours, with a median of 3 hours. Duration of illness ranged from 1 to 113 hours, with a median of 13 hours. Based on univariate analyses, potato salad (19 of 21 cases vs. 10 of 17 controls; odds ratio [OR], 6.7; 95% confidence interval [CI], 1 to 73; $p = 0.03$), vegetable dip (8 of 15 cases vs. 2 of 15 controls; OR, 7.4; 95% CI, 1 to 84; $p = 0.02$), carrots (9 of 15 cases vs. 3 of 14 controls; OR, 5.5; 95% CI,

0.9 to 42; $p=0.04$), and coffee (14 of 21 cases vs. 6 of 17 controls; OR, 3.7; 95% CI, 0.8 to 18; $p=0.05$) were associated with illness. Ham (19 of 21 cases vs. 11 of 17 controls; OR, 5.2; 95% CI, 0.7 to 58; $p=0.06$), baked beans (16 of 21 cases vs. 8 of 17 controls; OR, 3.6; 95% CI, 0.8 to 18; $p=0.06$), and buns (21 of 21 cases vs. 14 of 17 controls; OR, undefined; 95% CI lower limit, 0.8; $p=0.08$) approached statistical significance. In a stepwise regression model selection, potato salad remained associated with illness. The stool sample tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, *Campylobacter*, *Staphylococcus aureus*, *Bacillus cereus*, and calicivirus.

The epidemiologic and clinical characteristics of this outbreak are consistent with gastroenteritis caused by *Staphylococcus aureus*. Potato salad was implicated as the vehicle.

(38)

Calicivirus Gastroenteritis Associated with a Family Gathering

December

Wright County

On December 14, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among 11 persons who attended a family gathering in Annandale on December 11. A list of family members who attended the gathering was obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the gathering. One stool sample was collected within 2 days of illness onset and mailed to MDH for bacterial and viral testing.

All 11 attendees were interviewed, and four (36%) met the case definition. All four cases reported diarrhea, three (75%) reported vomiting, and one (25%) reported fever. The date of illness onsets was December 13. The incubation period ranged from 35 to 51 hours, with a median of 42 hours. Duration of illness was 20 hours or more. The only item associated with illness was Coke (odds ratio, undefined; $p<0.05$). Three (75%) of the four cases drank Coke, versus none of the controls. The stool sample tested positive for calicivirus.

This outbreak of calicivirus infection was associated with drinking Coke at the gathering. Illness would most likely be associated with an ill individual contaminating either the bottle of Coke or the glasses used to serve the beverage. The ice, which may have been served with the beverage, was not significantly associated with illness.

(39)

Viral Gastroenteritis Associated with Shrimp Served at a Catered Party

December

Blue Earth County

On December 23, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among guests of a company's customer appreciation event in Mankato on the evening of December 16. Lists of guests and foods served were obtained. Persons were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the party. No stool samples were collected.

Foods were catered by three departments in a grocery store: New York Style Deli, V's Kitchen, and Seafood Department. Tom and Jerry drinks were prepared by a guest. The three grocery store departments were inspected, employees who worked on preparing the food platters were interviewed, and product traceback was conducted by an Inspector from the Department of Agriculture. Lists of other events catered by the grocery store on the same day or 1 day prior were obtained, and organizers were contacted by MDH epidemiologists to ascertain illness.

Forty-eight guests were interviewed; four persons were excluded from the analysis because they had gastrointestinal symptoms that did not meet the case definition. Of the 44 persons included in the analysis, 29 (66%) met the case definition. Twenty-three (79%) had diarrhea, 24 (83%) had vomiting, nine of 26 (35%) had fever and two of 26 (8%) had bloody stools. The incubation period ranged from 23 to 52 hours, with a median of 36 hours. Duration of illness ranged from 6 to 192 hours, with a median of 40 hours. Several food items were associated with illness on the univariate analysis. Multivariate analysis indicated that both shrimp (odds ratio [OR], 17; 95% confidence interval [CI], 1.7 to 180; p=0.02) and Tom and Jerry's (OR, 6; 95% CI, 1.1 to 30; p=0.04) were associated with illness.

Inspection of the grocery store departments showed good handling and sanitizing practices and no problems with equipment. No illnesses were reported by grocery store employees. Traceback of the shrimp revealed that the product was United States Department of Commerce inspected and originated from Thailand. All the product from the lot had been sold by the time of the investigation. No other illnesses were reported from other events catered by the grocery store. The Tom and Jerry's were prepared by a guest of the event. They were prepared with raw eggs (washed with antibacterial soap), powdered sugar, vanilla and brandy.

The epidemiologic and clinical characteristics of this outbreak are consistent with viral gastroenteritis. Consumption of shrimp and Tom and Jerry's were associated with illness. We hypothesize that shrimp was most likely the vehicle and that the Tom and Jerry's potentiated the infectivity of the virus, making it more likely for those who had the Tom and Jerry's to become ill after eating the shrimp.

(40)

***E. coli* O157:NM Infections Associated with Ground Beef from a Grocery Store Chain**

December 1999-February 2000

Multi-County

From January to March, 2000 the Minnesota Department of Health (MDH) identified 10 cases of *E. coli* O157:NM among isolates submitted through routine statewide active laboratory-based surveillance. All 10 isolates had an indistinguishable pulsed-field gel electrophoresis (PFGE) pattern; this PFGE subtype (designated MN454) had not previously been identified.

A case-control study was conducted to determine risk factors for infection. Two controls per case were selected. Controls were selected using the case's telephone prefix and were matched to cases by age. Cases and controls were interviewed about food consumption and other exposures occurring in the 7 days prior to the case's onset of illness. One case had leftover ground beef consumed during the week before their illness and two cases had packages of ground beef reportedly purchased at the same time as the ground beef they consumed during the week prior to illness. These samples were submitted to the Minnesota Department of Agriculture (MDA) for testing.

Onsets of illness for the 10 cases ranged from December 29, 1999 to February 29, 2000. Eight cases had an onset of illness ranging from December 29, 1999 to January 14, 2000. The median age of cases was 18 years (range, 4 years to 62 years). Cases resided in six different counties in the Twin Cities metropolitan area: Hennepin (n = 3), Ramsey (n = 2), Dakota (n = 2), Anoka (n = 1), Scott (n = 1), and Wright (n = 1). Five of 10 cases (50%) were hospitalized for their illness. All cases reported diarrhea, nine (90%) reported bloody stools, seven (70%) reported cramps, seven (70%) reported fever, and four (40%) reported vomiting. Five of 10 cases (50%) were hospitalized for their illness. The median length of hospitalization was 4 nights (range, 1 to 5 nights). There were no cases of hemolytic uremic syndrome.

Nine of 10 cases (90%) reported eating ground beef purchased from one major chain of grocery stores (Chain A) during the week prior to onset of illness, compared to four of 20 controls (20%) (matched odds ratio, 11.8; 95% confidence interval, 1.5 - 92.9; p = 0.019). The ground beef consumed by the nine cases came from eight

different grocery stores from Chain A in the Twin Cities area. Seven of the nine cases had purchased extra lean or 93% lean ground beef, and four of the nine cases had bought a 1 lb. package. Of the five cases that could recall when the ground beef was purchased, three cases bought the ground beef during the last week of December 1999 and two in February 2000. No other exposures were significantly associated with illness.

The plant of origin of the ground beef could not be determined by MDA. None of the food samples recovered from cases' homes and tested by the MDA were positive for *E. coli* O157. Unopened ground beef chubs obtained from the warehouse and from individual stores were also tested by the MDA and were negative. This was an outbreak of *E. coli* O157:NM infections caused by ground beef purchased from a chain of grocery stores in the Twin Cities metropolitan area.

PROBABLE FOODBORNE OUTBREAKS

(1)

Calicivirus Gastroenteritis Associated with a Social Gathering

January

Ramsey County

On January 13, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who had attended a social gathering at a private residence in Roseville on January 10. The meal consisted of foods prepared by the hostess, guests, and a grocery store deli. Attendees were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the gathering. One stool sample was collected.

A total of 20 people were interviewed. Of these, 11 (55%) met the case definition. Ten cases (91%) had vomiting, eight (89%) of nine cases had cramps, six (67%) of nine cases had fever, and six (59%) of 11 cases had diarrhea. Dates of illness onset were January 11 and January 12. The median incubation period was 28 hours (range, 10 to 41 hours) and the median duration of illness was 40 hours (range, 32 to 45 hours). Calicivirus was identified in the stool submitted to MDH for testing. No food items were associated with illness.

This outbreak of calicivirus may have been caused by contamination of one or more food items by an infected individual. However, no food items were implicated as the source of the illnesses, and person-to-person transmission or other exposures could not be ruled out.

(2)

Calicivirus Gastroenteritis Associated with a Lunch in a Private Home

April

Anoka County

On April 7, 1999 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of an outbreak of gastrointestinal illness among persons who attended an Easter Brunch at a club in Brooklyn Park on April 4. The person calling in the complaint denied that the 11 persons attending the Easter Brunch had any other meals in common. Lists of names and telephone numbers of the persons attending the brunch were obtained from the complainant. Individuals were interviewed by epidemiologists from Hennepin County Community Health Department (HCCHD) about illness history. A case was defined as a person with onset of vomiting or diarrhea after attending the Easter Brunch. Two attendees submitted stool specimens to MDH for viral, bacterial, and bacterial toxin testing.

HCCHD epidemiologists obtained reservation lists from the club and contacted other parties attending the Easter Brunch on April 4 to determine if there were any other illnesses. Sanitarians from Brooklyn Park Environmental

Health Division conducted an inspection and food preparation review at the club and interviewed food workers about illness history. Eleven (100%) of 11 members of the party that made the original complaint were interviewed and eight (73%) met the case definition. Seven cases (88%) had diarrhea, six (75%) had cramps, five (63%) had vomiting, and two (25%) had fever. Dates of illness onset were April 4 and April 5. The median duration of illness was 1 day (range, 1 to 2 days). The two stool specimens collected were positive for calicivirus.

The environmental health inspection of the club noted no critical foodhandling violations and no ill employees. Interviews with other parties that ate at the club on April 4 did not identify any other ill groups. In the course of interviewing, it was revealed that the 11 people who had eaten together at the Easter Brunch at the club on April 4 had also eaten lunch together at a private home in Coon Rapids on April 3. Items served at this lunch included macaroni and cheese, soup, fruit salad, rolls, and potato chips. The median incubation period from lunch on April 3 was 35 hours (range, 27 to 43 hours) which is consistent with the known incubation period for calicivirus infection. In contrast, the median incubation period from the Easter Brunch was just 11 hours. The 11 people were not interviewed regarding food consumption at the private home, so the association between food items and illness could not be evaluated.

This outbreak of calicivirus infection may have been associated with a lunch served at a private home. However, the potential association between the lunch and the subsequent illnesses was not fully investigated.

(3)

Viral Gastroenteritis Associated with a Private Gathering

April

Dakota County

On April 29, 1999 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of an outbreak of gastrointestinal illness among persons who attended a gathering at a private home in Lakeville on April 25. The attendees ate five pizzas that were delivered from a restaurant in Apple Valley. The types of pizza served were pepperoni, pepperoni and cheese, sausage and mushroom, sausage and black olives, and deluxe. Cake prepared by an attendee and ice cream also were served. Lists of names and telephone numbers of the persons attending the gathering were obtained from the complainant. Individuals were interviewed by epidemiologists from MDH about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the gathering. Two attendees submitted stool specimens to MDH for bacterial and viral testing. No environmental health inspection of the restaurant was conducted by MDH Environmental Health Services.

Eight (53%) of the 15 attendees were interviewed, and all eight (100%) met the case definition. All eight cases (100%) had diarrhea, six (75%) had cramps, six (75%) had vomiting, and four (50%) had fever. The median incubation was 37 hours (range, 29 to 49 hours). The two stool specimens collected were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus. No non-ill attendees were interviewed; therefore, the association between food items and illness could not be evaluated.

The clinical and epidemiologic characteristics of this outbreak are consistent with viral gastroenteritis. The association between illness and food items served at the private gathering could not be confirmed.

(4)

Viral Gastroenteritis Associated with a Potluck in a Private Home

May

Hennepin County

On May 19, 1999 the Minnesota Department of Health notified the Hennepin County Community Health Department (HCCHD) about reported gastrointestinal illness associated with a potluck held in a private residence in Minnetonka. The hostess sent a partial list of attendees. Persons who had attended the potluck were contacted by HCCHD epidemiologists initially to identify food items brought to the potluck and other party attendees. This process was time consuming and resulted in interviews being delayed. Of the 50 attendees, 30 persons were interviewed for illness and food histories. Illness histories were available on eight additional attendees, but food histories could not be obtained. A case was defined as a person with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the potluck. No stool samples were collected.

Of the 30 persons interviewed, 16 (54%) fit the case definition. The symptoms were diarrhea (94%), vomiting (62%), nausea (62%), cramps (44%), headache (44%), and fever (19%). The incubation period ranged from 5 to 62.5 hours, with a median of 39.5 hours. Two families indicated that they had children that had vomiting and/or diarrhea prior to the parents attending the potluck. After the potluck more members of those families, including parents who attended the potluck, also became ill. In addition, there were several families where the parent attended the potluck, and subsequently they and their children became ill the same day. Also noted was the presence of gastrointestinal illness at the school of attendees' children. In addition to the 16 cases from the potluck, nine children of cases also had illness. At the same time, the schools in the school surveillance system were also reporting a number of students in the community with vomiting and/or diarrhea. Statistical analysis was conducted to determine the association of food items with illness. One of the food items, a hot entree, was significantly associated with illness. The family who prepared the item denied any illness prior to the potluck. The person who prepared the item attended the potluck and developed illness 3 days later.

The clinical and epidemiologic characteristics of this outbreak are consistent with viral gastroenteritis. This appears to be a community-acquired illness with subsequent spread to potluck attendees and within their families. One food item was statistically significant; however, the role of this food item is unclear. Since this was a hot entree and served with a spoon, the potential for guests to have contaminated the entree seems low. Person-to-person transmission cannot be ruled out as the cause of this outbreak.

(5)

Salmonellosis Associated with a Restaurant

June

Ramsey County

In July 1999, a cluster of cases infected with *Salmonella montevideo* pulsed-field gel electrophoresis subtype pattern SMON11 was detected through routine laboratory surveillance. The five cases that made up the cluster had stool specimen collection dates from July 2 to July 12. The five cases in this cluster were interviewed about illness and food consumption history with a standardized questionnaire. Two cases resided in Ramsey County, and the other cases resided in Hennepin, Washington, and Olmsted Counties.

Onset of diarrhea occurred from June 18 to July 6. Three of the five cases recalled having eaten at a specific fast-food restaurant in Maplewood within 7 days prior to the onset of illness. The cases had no other restaurant or food items in common. A sanitarian from the City of Maplewood interviewed the restaurant's manager, who reported that none of the employees had been ill in the weeks prior to the onset of illness in cases. However, interviews with individual foodhandlers were not conducted.

This was a cluster of five cases of *Salmonella montevideo* PFGE subtype pattern SMON11. Although the

interview data suggests that the cluster was associated with eating at a fast-food restaurant in Maplewood, this association could not be confirmed with the number of observed cases.

(6)
Calicivirus Gastroenteritis Associated with a Restaurant

August

Ramsey County

On August 17, 1999 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of an outbreak of gastrointestinal illness among persons from four different households who ate together at a restaurant in St. Paul on August 14. The persons denied any other common exposures with members of the other households prior to illness. A list of names and telephone numbers of the other persons in the party that dined at the restaurant was obtained from the complainant. Individuals were interviewed by epidemiologists from MDH about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after eating at the restaurant. Two cases submitted stool specimens to MDH for bacterial and viral testing. A sanitarian from the City of St. Paul Office of License, Inspections and Environmental Protection conducted inspections of the restaurant on August 17 and 19.

Six (85%) of the seven attendees were interviewed, and four (67%) met the case definition. All four cases reported diarrhea and vomiting, and one of three cases (33%) reported fever. The median incubation was 25 hours (range, 16 to 33 hours). Drinking iced tea approached statistical significance (4 of 4 cases vs. 0 of 2 controls; odds ratio, undefined; lower bound of 95% confidence interval, 0.81; $p = 0.07$). The two stool specimens collected were positive for calicivirus. The environmental health inspection of the restaurant found multiple foodhandling violations including improper holding of cold foods, a malfunctioning dish machine, lack of a certified food manager, and poor handwashing practices. The restaurant manager denied employee illnesses when questioned by the sanitarian. However, individual interviews with food workers about illness history were not conducted.

This was an outbreak of calicivirus infection that may have been associated with eating in a restaurant. However, the possible role of ill food workers was not evaluated, and the outbreak could not be conclusively linked to the restaurant.

(7)
Calicivirus Gastroenteritis Associated with a Nursing Home

August

Wabasha County

On August 16, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among residents at a facility in Plainview that houses 60 residents in a nursing home setting, nine in assisted living, and three in apartment living. Their dietary services are provided by a private company. The nursing home staff and the Infection Control Practitioner (ICP) compiled a list of all residents and provided information about illness in residents. A case was defined as a person with diarrhea or vomiting during August 14-17 as reported by the ICP. A menu of all the meals served during the week of August 9 through August 15 was obtained. Dietary staff were interviewed about illness history and work responsibilities by sanitarians from the MDH Environmental Health Services Regional Office. Stool samples were collected from four residents; all were tested for bacterial pathogens, and three were tested for viral pathogens. One stool sample from an employee was collected and tested for bacterial and viral pathogens. The on-site investigation was conducted by the MDH Southeastern District epidemiologist.

The ICP identified 62 of 72 residents (86%) who became ill with gastrointestinal symptoms during August 14 through August 17. Of these, 48 met the case definition. An additional four residents had fever or nausea only.

One case had onset of illness on August 14, 37 (77%) on August 15 (with at least 30 of these during the morning), nine (19%) on August 16, and one (2%) on August 17. More detailed information about symptoms was collected for 39 cases. Diarrhea was reported for 38 cases (97%), vomiting for 24 (62%), and fever for 14 (36%). At the time of the investigation, only five persons had recovered. The median duration of illness for those five cases was 2 days. All four stool specimens from residents were negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, and *Campylobacter*, but two of the three specimens tested for viral pathogens were positive for calicivirus. Four food workers reported gastrointestinal illness; however, onsets of illness coincided with the onset of residents' illness. Although not reported during the interviews, the ICP reported prior to the investigation that one of the food workers was ill from August 12-15 but worked during that time. The stool specimen submitted to MDH from an employee tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, *Campylobacter*, and calicivirus.

This was an outbreak of calicivirus gastroenteritis in a nursing home. The peak of illness onsets on the morning of August 15 and the median incubation of calicivirus of approximately 36 hours suggests that the exposure occurred during dinner served Friday, August 13. The menu for that meal consisted of several food items that likely required substantial hand contact during preparation, including Hawaiian chicken sandwiches, frosted cupcakes, and cottage cheese fruit plates. These factors, coupled with the unconfirmed report of an ill food worker August 12-15, suggest contamination of one or more food items by an infected food worker. However, cases were not systematically interviewed about food exposures, and person-to-person transmission could not be ruled out as the cause of the outbreak.

(8)

Gastroenteritis Associated with a Groom's Dinner

August

Kandiyohi County

On August 31, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among guests of a groom's dinner held in a banquet facility in Willmar on August 27 at 6:00 p.m. Lists of attendees and foods served were obtained. Individuals were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the groom's dinner. No stool samples were collected. Banquet facility employees who worked on August 27 were interviewed by an Environmental Health Specialist from Kandiyohi County Public Health.

Eighteen attendees were interviewed; one person was excluded from the analysis due to having a gastrointestinal illness with recovery 2 days prior to the event. Of the 17 attendees included in the analysis, 11 (65%) met the case definition. All cases reported diarrhea, six of 10 (60%) reported vomiting, and one of six (17%) reported fever. The incubation period ranged from 2 to 12 hours, with a median of 8 hours. Duration of diarrhea was 1 to 72 hours, with a median of 14 hours. Cases consumed a variety of foods ordered from the menu, including walleye fillet, teriyaki chicken, broasted chicken, spinach fettuccine, cheese tortellini, hamburger, Reuben sandwich, mashed potatoes, rice, bread, and dinner salads. No foods were statistically associated with illness. The group denied having any meals in common prior to the groom's dinner. There were no illnesses reported by banquet facility employees.

This outbreak of gastroenteritis may have been associated with a groom's dinner. However, no food items were implicated as the source of the illnesses, and person-to-person transmission or other exposures associated with the wedding festivities cannot be ruled out as the cause of the outbreak.

(9)

Gastroenteritis Associated with a Restaurant

October

Ramsey County

On October 22, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among a group of coworkers who had lunch together earlier that day at a Chinese food buffet restaurant in Roseville. A list of persons in the group who ate together was obtained. Persons were interviewed about food consumption and illness history by epidemiologists from MDH. A case was defined as any person who had lunch at the restaurant and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). None of the ill persons were willing to provide stool samples for pathogen testing.

Six of seven (86%) persons were interviewed. Two people were excluded from the analysis because they had mild gastrointestinal symptoms and did not meet the case definition. Two (50%) of the remaining persons met the case definition. One case (50%) reported diarrhea and one (50%) reported vomiting. Neither case reported fever. Both cases had illness onsets on the same day of the meal, October 22. Incubation periods were 1.5 and 1.75 hours. Illness duration was available for only one case and was 20 hours. Of the two persons that did not meet the case definition, one had onset of diarrhea 2 hours after the meal. Persons in the group denied having other meals in common. Due to the small number of cases, no specific foods were associated with illness.

This was an outbreak of gastroenteritis that may have been associated with eating at a restaurant. The etiology and vehicle of the outbreak are unknown, and the association between the restaurant and the illnesses reported could not be confirmed with the number of cases.

(10)

Gastroenteritis Associated with a Restaurant

November

Olmsted County

On November 10, 1999 Olmsted County Public Health Services (OCPHS) was contacted by the manager of a restaurant in Oronoco regarding a possible outbreak of illness at this restaurant. The complaints of illness received by the restaurant manager included customers from two separate groups. One group ate a meal provided during a seminar held at the restaurant the evening of November 7 (Group A) and the other group consisted of regular customers not associated with the seminar group who ate at the restaurant on both November 7 and November 8 (Group B). Menus from both groups and a list of regular customers from a reservation list and credit card receipts were obtained. A partial list of seminar attendees also was obtained. Attendees were interviewed by OCPHS epidemiologists about food consumption and illness history. A case was defined as a person with vomiting or diarrhea (≥ 3 stools in a 24-hour period) after eating at the restaurant. OCPHS sanitarians conducted an environmental inspection and food preparation review and interviewed food workers about job duties, food consumption, illness history, and illness history in family members.

Eight (40%) of 20 persons interviewed met the case definition. However, two separate groups with somewhat distinct symptom profiles, incubations, and durations were identified. In Group A, of ill persons who ate at the restaurant on November 7, five of five (100%) cases reported diarrhea, four of five (80%) reported cramps, one of five (20%) reported fever, and none reported vomiting. The median incubation period was 2 hours (range, 2 to 8 hours), and the median duration of illness was 55 hours (range, 17 to 69 hours). Group A all consumed a prime rib dinner consisting of sliced prime rib, baked potato with choice of sour cream or butter topping, lettuce salad with choice of dressing, garlic toast, roll with butter, and choice of beverage. Several people reported the prime rib to be cold and discolored. The prime rib was reported to be prepared the same day of service; however, the food preparation review noted that it was common practice that many foods in the restaurant were prepared

several days in advance of service. In Group B, ill persons who ate at the restaurant on both November 7 and November 8, three of three (100%) cases reported diarrhea, three of three (100%) reported cramps, two of three (67%) reported vomiting, and none reported fever. The median incubation period from brunch on November 7 was 39 hours (range, 35 to 40 hours), and the median duration of illness was 49 hours (range, 31 to 54 hours). Brunch on November 7 consisted of a buffet of breakfast foods including scrambled eggs, hash browns, french toast, sweet rolls, and fruit juices. No foods were statistically associated with illness when cases were analyzed as one group or separately as two groups.

Interviews of food workers identified four of 12 (33%) who were ill during this time period. Four of four (100%) reported vomiting, three of four (75%) reported diarrhea, and three of four (75%) reported cramps. All four ill employees worked the morning and part of the afternoon on November 7 (12 to 36 hours prior to their illness onsets); one ill employee worked on November 8. None reported working while symptomatic. All four ill food workers reported having family members with vomiting and/or diarrhea during this time period. All four ill food workers reported eating the brunch or other meals at the restaurant on November 7 and 8. One stool sample collected from an ill employee was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus.

It appears that two separate outbreaks occurred. The illnesses of Group A, only exposed to the November 7 prime rib dinner, were clinically and epidemiologically consistent with a bacterial toxin-mediated pathogen such as *Clostridium perfringens* or *Bacillus cereus*. Although there was no specific evidence of temperature abuse, the advance preparation of many foods was observed, indicating that improper cooling and reheating was a potential risk factor in this facility. The symptom profile of Group B, and their incubation period from the brunch on November 7, are consistent with viral gastroenteritis. The symptom profiles of Group B and the four ill food workers are similar, suggesting that these individuals were part of a second outbreak of viral gastroenteritis. No specific food vehicles or sources of contamination were confirmed.

(11)

Gastroenteritis Associated with a Wedding Reception

November

Hennepin County

On November 9, 1999 the Minnesota Department of Health (MDH) identified two cases of diarrheal illness that had eaten in a common restaurant. The second case had indicated that nine people who ate at the restaurant had also attended a wedding reception in Golden Valley on November 6. Hennepin County Community Health Department (HCCHD) obtained the names and phone numbers of all nine people, including the bride and groom. HCCHD was unable to obtain the guest list for the reception, but by interviewing others from the initial list, 43 of approximately 200 wedding reception attendees were identified. Epidemiologists from HCCHD interviewed wedding reception attendees about food consumption and illness history. A case was defined as a person with 3 or more loose stools in 24-hour period since November 6. Two stool samples were collected from attendees and submitted to MDH for viral and bacterial testing. On November 10, the manager of the facility where the wedding reception was held was contacted and provided a list of employees involved in food preparation and service. The manager denied any employee illness. A sanitarian from the City of Golden Valley inspected the facility and interviewed staff about food preparation duties and illness history.

Eleven staff at the facility where the wedding reception was held and 28 wedding reception attendees were interviewed. None of the staff reported being ill. Twenty-four attendees (86%) had diarrheal illness. Specific information on symptoms, incubation periods, and illness durations was not provided to MDH. Illness onset dates ranged from November 7 to November 9; the majority of cases (71%) had onset of illness on November 8. Both stool samples collected were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus. No food items served at the reception were statistically associated with illness.

Without additional information on the clinical and epidemiologic characteristics of this outbreak, the etiology could not be determined. No vehicle was identified and person-to-person transmission or other exposures could not be ruled out as the source of the outbreak.

(12)
Viral Gastroenteritis Associated with a Restaurant

November

St. Louis County

On November 15, 1999 the St. Louis County Department of Public Health (SLCDPH) received a foodborne illness complaint call from a person who had eaten pizza from a restaurant in Proctor. The caller reported that several other people who attended a birthday party where pizza from the restaurant was served had also become ill. SLCDPH obtained a list of party attendees and a menu of items served from the birthday party hostess. Four different pizzas from the restaurant were served at the party; attendees helped themselves to slices. A cake from a bakery, canned beverages, and juice pouches also were served. Attendees were contacted and interviewed by SLCDPH epidemiologists about food consumption and illness history. A case was defined as a person with onset of diarrhea or vomiting within 72 hours of attending the party. No stool samples were collected from attendees.

All 17 attendees were interviewed and 10 of the 17 (59%) fit the case definition. Nine of 10 cases (90%) had diarrhea, 10 of 10 (100%) had vomiting, six of 10 (60%) had cramps, and two of 10 (20%) had fever. The median incubation period was 38 hours (range, 32 hours to 55.5 hours). The median duration of illness was 25 hours (range, 14 to 30 hours). The association of cheese pizza with illness approached statistical significance (6 of 10 cases vs. 1 of 7 controls; odds ratio, 9.0; $p=0.06$). The manager of the restaurant was contacted and denied any other patron complaints or illnesses among employees.

The clinical and epidemiologic characteristics of this outbreak are consistent with viral gastroenteritis, possibly associated with pizza served at a birthday party. Although no ill food workers were identified at the restaurant, food workers were not interviewed individually about illness history. Person-to-person transmission or other exposures could not be ruled out as the source of the outbreak.

(13)
Calicivirus Gastroenteritis Associated with a Catered Wedding Reception

December

Ramsey County

On December 8, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among 180 persons who attended a wedding reception at a church in Brooklyn Park on December 4. The event was catered by a caterer from North St. Paul. A list of guests was obtained by MDH and a list of employees who prepared and/or served food at the event was obtained by the St. Paul-Ramsey County Department of Public Health. Wedding guests were interviewed by MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea (≥ 3 loose stools in a 24-hour period) after attending the reception. Stool samples from five ill guests were collected within 2 to 4 days of illness onset and mailed to MDH.

Eighty-nine (49%) of 180 attendees were interviewed and 31 (35%) met the case definition. Twenty-eight cases (90%) reported diarrhea, 18 (58%) reported vomiting, and seven (23%) reported fever. Dates of illness onset were December 4 to December 8. Incubation periods ranged from 2 to 102 hours, with a median of 44 hours. Duration of illness was 4 to 133 hours, with a median of 58 hours. One individual reported being ill with diarrhea and vomiting a day prior to the wedding. This individual also attended the rehearsal dinner, which took place the evening before. Two cases had an extremely short incubation period of 2 to 3 hours. The owner of the

catering company reported that there may have been two employees who were ill in the week prior to the wedding reception. Interviews were not conducted with those employees.

None of the food items were significantly associated with illness. All stool samples tested negative for bacterial pathogens, such as *Shigella*, *E. coli* O157:H7, *Salmonella*, and *Campylobacter*. One of the five stool samples tested positive for calicivirus.

A St. Paul-Ramsey County Department of Public Health sanitarian conducted an investigation of the caterer. Information was gathered on the preparation methods for foods served at the event. This investigation did not find any problems with the preparation of the menu items. The caterer catered three other events that weekend. Follow-up with those events indicated that there were no additional reports of illness associated with the catering company.

This was an outbreak of calicivirus that may have been associated with a catered wedding reception. No food vehicle was identified and the source of the outbreak is not known. Foods may have been contaminated by recently ill food workers during preparation, or by guests at the reception. Person-to-person transmission cannot be ruled out as the source of the outbreak.

(14)

Viral Gastroenteritis Associated with a Family Gathering

December

Hennepin County

On December 29, 1999 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a family gathering at a private home in Brooklyn Park on December 24. Foods consumed at the gathering were prepared by attendees or store-bought. Lists of foods served and attendees were obtained. Persons were interviewed about food consumption at the gathering and illness history by epidemiologists from MDH. A case was defined as any person who had attended the event and who subsequently became ill with vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Three stool samples were collected for bacterial and viral pathogen testing.

Eight of nine attendees (89%) were interviewed. One attendee was excluded from the analysis because of gastrointestinal symptoms with onset prior to the gathering. The remaining seven attendees met the case definition. All seven cases had vomiting, six (86%) had fever, five (71%) had diarrhea, and none had bloody stools. Dates of illness onset were December 25 and December 26. Incubation periods ranged from 8 to 49 hours, with a median of 33 hours. Duration of illness ranged from 28 to 107 hours, with a median of 45 hours. All stool samples tested negative for *E. coli* O157:H7, *Shigella*, *Salmonella*, *Campylobacter*, and calicivirus. The person with onset of gastrointestinal illness prior to the gathering had a duration of illness of approximately 6 days, including the day of the event. Two household members of this person had the shortest incubation periods (8 and 13 hours), and one of them prepared foods for the gathering. Because all persons interviewed were ill, statistical analysis was not possible, and therefore no foods were found to be associated with illness.

The clinical characteristics of this outbreak are consistent with viral gastroenteritis. Contamination of food items by the food preparer who had an ill household member is a plausible source of the outbreak. However, person-to-person transmission cannot be ruled out.

CONFIRMED WATERBORNE OUTBREAKS (RECREATIONAL WATER)

(1)

Cryptosporidiosis Associated with Swimming in a Mobile Home Park Pool

July

Olmsted County

On August 5, 1999 the manager of a Rochester mobile home park notified a sanitarian at Olmsted County Public Health Services (OCPHS) that the manager's child had been diagnosed with cryptosporidiosis. The child's physician had requested that the manager contact OCPHS and had also suggested that the manager close the park's swimming pool. The manager reported receiving additional complaints of illness from other families/groups at the mobile home park. Preliminary interviews with a sample of ill persons indicated that they did not have the same food history but had all recently swam in the mobile home park pool. The park manager was asked to provide a list of all park tenants and to identify all persons who had complained of diarrheal illness. Persons reportedly ill were interviewed to assess disease history and exposure to possible *Cryptosporidium* sources. Ill persons were also asked to submit a stool specimen. A letter explaining the discovery of a confirmed cryptosporidiosis case and the possible link to swimming in the pool was sent to all park tenants. A *Cryptosporidium* information sheet was also included. Tenants were asked to report any illness similar to that described in the information sheet to OCPHS and then consult their physician regarding the disease. The local medical community was informed of a possible outbreak, to heighten awareness of the importance of collecting a stool specimen in suspect cases. The pool was closed on August 5 and remained voluntarily closed for the remainder of the season.

One hundred and thirty-nine individuals living in 92 families resided in the mobile home park. Eleven residents were interviewed; 10 met the case definition of illness. A case was defined as a person with laboratory-confirmation of *Cryptosporidium* in a stool specimen and/or diarrhea lasting 3 or more days following swimming in the pool. Eight of the ten cases were stool-positive for *Cryptosporidium*. Dates of illness onset ranged from July 12 to August 5. The most prominent symptoms were diarrhea (100%), abdominal cramps (100%), nausea (89%), loss of appetite (78%), and severe weakness (78%). Eight of the 10 cases were still ill at the time of the interview. The two cases that were recovered at the time of the interview had durations of 9 and 18 days, respectively. The median age of the cases was 7 years (range, 3 to 32 years).

An inspection of the swimming pool was conducted, and the pool maintenance and chemistry log for the month of July was examined. The records indicated the pool's chlorinating equipment required repair on two separate occasions in July. Chlorine levels were recorded as zero from July 18 to July 20 and from July 27 to July 28. After both repairs, the pool was superchlorinated for approximately 2 hours, the chlorine level was chemically lowered to between 0.5 to 5.0 parts per million, and the pool was reopened. The pool manager did not receive any reports of fecal contamination of the pool during the month of July.

This was an outbreak of cryptosporidiosis associated with swimming in a mobile home park pool. The suspect index case had onset of diarrhea on July 12. The case moved into the park on July 24, and began swimming in the pool at that time. The parent of the suspect index case was unsure if the child was experiencing diarrhea while swimming in the pool. Problems with the pool chlorination equipment were documented on two separate occasions in July. Following the investigation, OCPHS sanitarians made recommendations regarding chlorination standards for the pool and recommended that a sign be posted at the pool entrance prohibiting swimmers from using the pool if they have experienced diarrhea in the previous 2 weeks.

Confirmed Foodborne Outbreaks Minnesota, 1999

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jan	Restaurant, table service	15	0	Unknown	Viral gastroenteritis*	Ill food workers	Kandiyohi
Jan	Catered lunch	20	0	Chicken	<i>Clostridium perfringens</i> *	Improper cooling/reheating	Anoka
Jan	Commercially distributed product	3	3	Hamburger	<i>E. coli</i> O157:H7	Contaminated ground beef	Multi-County, Multi-State
Feb	Restaurant, table service	6	0	Lasagna	<i>Clostridium perfringens</i> *	Improper cooling/reheating	Olmsted
Feb	Catered lunch	63	8	Pasta salad and strawberries	Calicivirus	Unknown	Hennepin
Apr	Entertainment center	9	0	Raw onions and julienne string beans	Viral gastroenteritis*	Unknown	Ramsey
May	Elementary school	29	0	Lunch	Viral gastroenteritis*	Unknown	Ramsey
May	Restaurant, table service	3	3	Unknown	<i>Salmonella heidelberg</i>	Infected food workers and time-temperature violations	St. Louis
May	Barbecue, private home	12	0	Hamburger buns	Viral gastroenteritis*	Ill guests at event	Ramsey
Jun	Graduation party	25	0	Potato salad	Viral gastroenteritis*	Unknown	Wright
Jun	Restaurant, fast food	5	0	Submarine sandwiches	<i>Clostridium perfringens</i> *	Unknown	Anoka
Jun	Picnic	5	2	Sloppy joes	<i>E. coli</i> O157:H7	Unknown	Brown
Jun	Restaurant, table service	11	11	Unknown	<i>Salmonella montevideo</i>	Unknown	Hennepin

* Epidemiologically defined agent

**Confirmed Foodborne Outbreaks
Minnesota, 1999 (continued)**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jun	Commercially distributed product	6	6	Unpasteurized orange juice	<i>Salmonella muenchen</i>	Contaminated unpasteurized product	Multi-County, Multi-State
Jun	Restaurant, table service	50	50	Unknown	<i>Salmonella heidelberg</i>	Infected food workers, cross-contamination	Douglas
Jul	Banquet hall	9	1	Meatballs	Calicivirus	Unknown	Hennepin
Jul	Restaurant, fast food	7	0	Sliced cheese	Viral gastroenteritis*	Ill food worker	Washington
Aug	Restaurant, table service	27	1	Lettuce salad	Calicivirus	Unknown	Washington
Aug	Restaurant, table service	3	3	Unknown	<i>Salmonella typhimurium</i>	Unknown	Hennepin
Aug	Restaurant, buffet	12	0	Chile rellenos and chicken enchiladas	Viral gastroenteritis*	Unknown	Ramsey
Aug	Catered lunch	15	0	Antipasto salad	Viral gastroenteritis*	Ill food worker	Ramsey
Sep	Church potluck	20	0	Ice	Viral gastroenteritis*	Ill food preparers	Ramsey
Sep	Catered lunch	5	0	Cantaloupe	Viral gastroenteritis*	Unknown	Hennepin
Sep	Birthday party, private home	16	0	Fruit salad and macaroni salad	Viral gastroenteritis*	Ill child at event	Polk
Sep	Grocery store deli	5	5	Sliced deli meats	<i>Listeria monocytogenes</i>	Unknown	Olmsted
Oct	Conference center	9	0	Bacon	Unknown	Unknown	Ramsey
Oct	Hotel banquet	10	0	Vegetarian spring rolls	Unknown	Unknown	Hennepin

* Epidemiologically defined agent

**Confirmed Foodborne Outbreaks
Minnesota, 1999 (continued)**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Oct	Catered wedding reception	21	0	Unknown	Viral gastroenteritis*	Ill food worker	Ramsey
Oct	Restaurant, table service	7	0	Pasta salads	<i>Staphylococcus aureus</i>	Unknown	Stearns
Oct	Catered lunch	9	1	Unknown	Calicivirus	Ill food workers	Hennepin
Oct	Restaurant, fast food	18	1	Submarine sandwiches	Calicivirus	Unknown	Ramsey
Oct	Restaurant, table service	13	0	Unknown	Viral gastroenteritis*	Ill food worker	Stearns
Nov	Restaurant, table service	12	0	Cold food items	Viral gastroenteritis*	Ill food worker	McLeod
Nov	Grocery store deli	11	2	Sandwich ingredients and ice	Calicivirus	Unknown	Anoka
Nov	Restaurant, table service	19	0	Cold sandwich items	Viral gastroenteritis*	Ill food workers	McLeod
Nov	Birthday party, private home	15	5	Red grapes	Calicivirus	Ill child at event	Dakota
Dec	Wedding reception	21	0	Potato salad	<i>Staphylococcus aureus</i> *	Unknown	Crow Wing
Dec	Family gathering, private home	4	1	Beverage	Viral gastroenteritis*	Unknown	Wright
Dec	Party catered by a grocery store	29	0	Shrimp and Tom and Jerry's drinks	Viral gastroenteritis*	Unknown	Blue Earth
Dec	Grocery store chain	10	10	Ground beef	<i>E. coli</i> O157:NM	Unknown	Multi-County

TOTAL: 40

* Epidemiologically defined agent

**Confirmed Waterborne Outbreaks
Minnesota, 1999**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jul	Mobile home park	10	8	Swimming pool	<i>Cryptosporidium</i>	Chlorination equipment malfunction	Olmsted

TOTAL: 1

**Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 1999**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Jan	Nursing home	76	2	Person-to-person	Calicivirus	Hennepin
Jan	Nursing home	40	3	Person-to-person	Calicivirus	Hennepin
Jan	Daycare	6	6	Person-to-person	<i>Salmonella typhimurium</i>	Yellow Medicine
Apr	Entertainment center	3	2	Unknown	Calicivirus	Ramsey
Apr	Nursing home	23	1	Person-to-person	Calicivirus	Aitkin
May	Nursing home	39	0	Person-to-person	Viral gastroenteritis*	Hennepin
May	High school	4	0	Unknown	Unknown	Wright
May	Daycare	55	27	Person-to-person	<i>Shigella sonnei</i>	Hennepin
May	Daycare	1	1	Person-to-person	<i>Shigella sonnei</i>	Hennepin
Jun	Camp	48	0	Unknown	Viral gastroenteritis*	St. Louis
Jul	Daycare	5	0	Person-to-person	Unknown	Anoka
Jul	Daycare	25	16	Person-to-person	<i>Shigella sonnei</i>	Hennepin
Jul	Daycare	81	38	Person-to-person	<i>Shigella sonnei</i>	Hennepin
Jul	Daycare	15	15	Person-to-person	<i>Shigella sonnei</i>	Ramsey

* Epidemiologically defined agent

**Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 1999 (continued)**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Jul	Daycare	13	3	Person-to-person	Calicivirus	Hennepin
Aug	Daycare	2	2	Person-to-person	<i>E. coli</i> O157:H7	Fillmore
Aug	Private homes, daycare	7	7	Exposure to cats; subsequent person-to-person in daycare	<i>Salmonella typhimurium</i>	Multi-County
Aug	Private home	4	1	Unknown	Calicivirus	Hennepin
Aug	Camp	49	3	Person-to-person	Calicivirus	Hubbard
Sep	Hotel restaurant	11	1	Unknown	Calicivirus	Hennepin
Sep	Daycare	2	2	Person-to-person	<i>Salmonella typhimurium</i>	Benton
Oct	Elementary school	24	3	Person-to-person	Calicivirus	Scott
Oct	Daycare	10	8	Person-to-person	<i>Shigella flexneri</i>	Hennepin
Nov	Wedding	11	0	Person-to-person	Viral gastroenteritis*	Watonwan
Nov	Nursing home	25	1	Person-to-person	Calicivirus	Hennepin
Nov	Nursing home	68	1	Person-to-person	Calicivirus	Martin
Nov	Elementary school	32	0	Person-to-person	Viral gastroenteritis*	Steele
Dec	Nursing home	37	2	Person-to-person	Calicivirus	Hennepin

* Epidemiologically defined agent

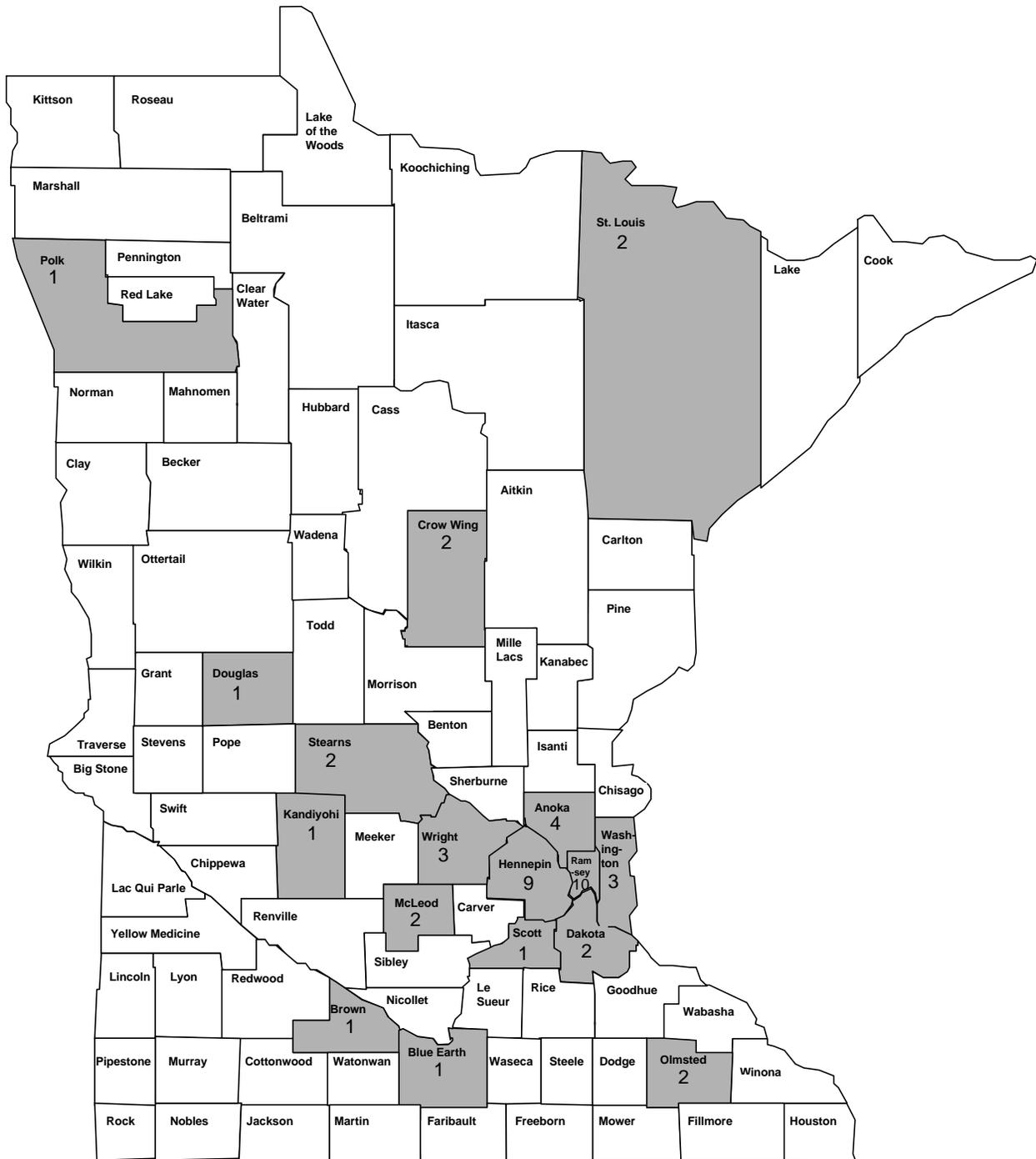
**Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 1999 (continued)**

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Dec	Daycare	2	2	Person-to-person	Non-O157 enterohemorrhagic <i>E. coli</i>	Morrison
Dec	Holiday party	7	1	Person-to-person	Calicivirus	Waseca
Dec	Private home	3	0	Person-to-person	Viral gastroenteritis*	Hennepin

TOTAL: 31

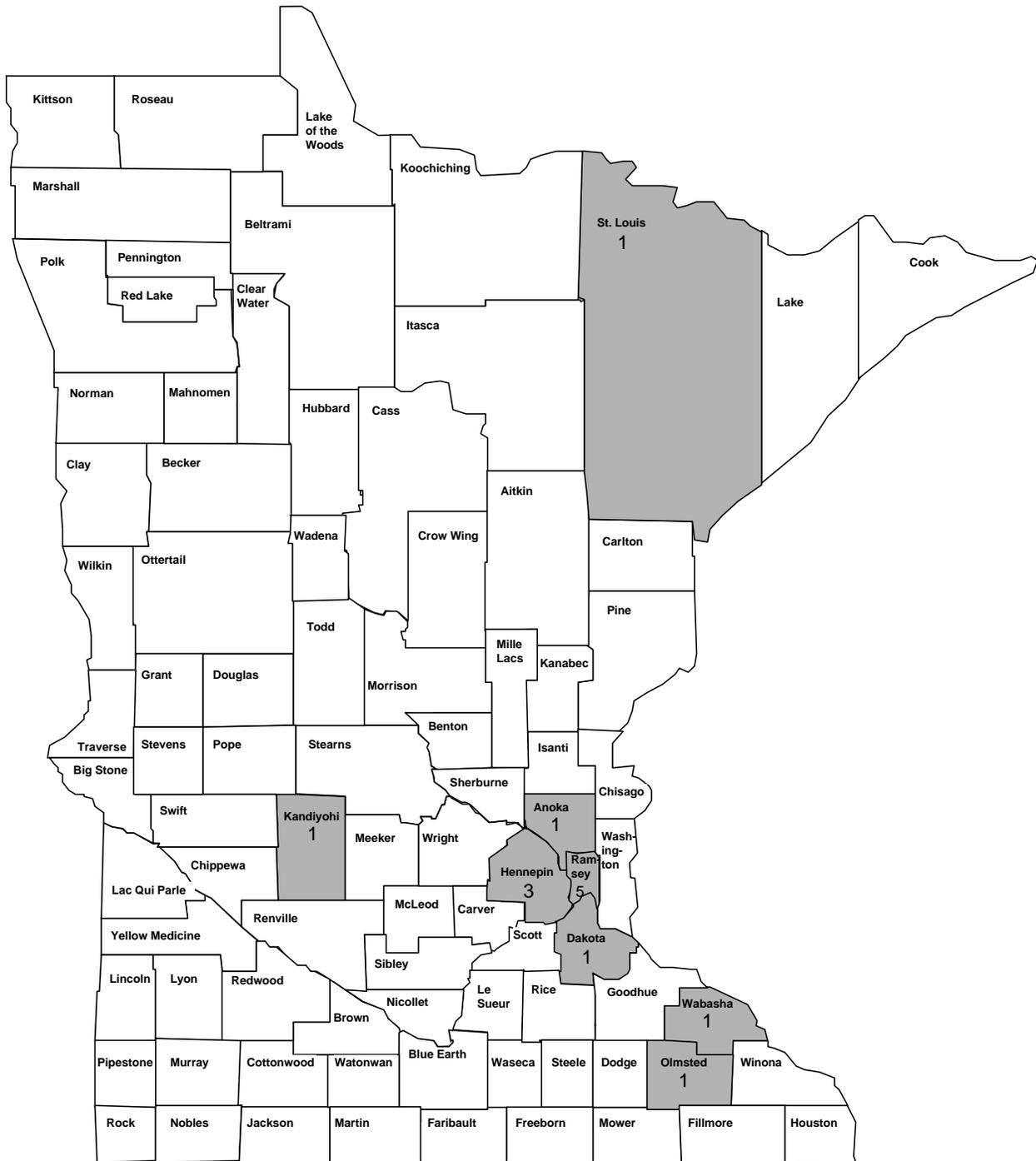
* Epidemiologically defined agent

Confirmed Foodborne Outbreaks by County, Minnesota, 1999 (n=40*)

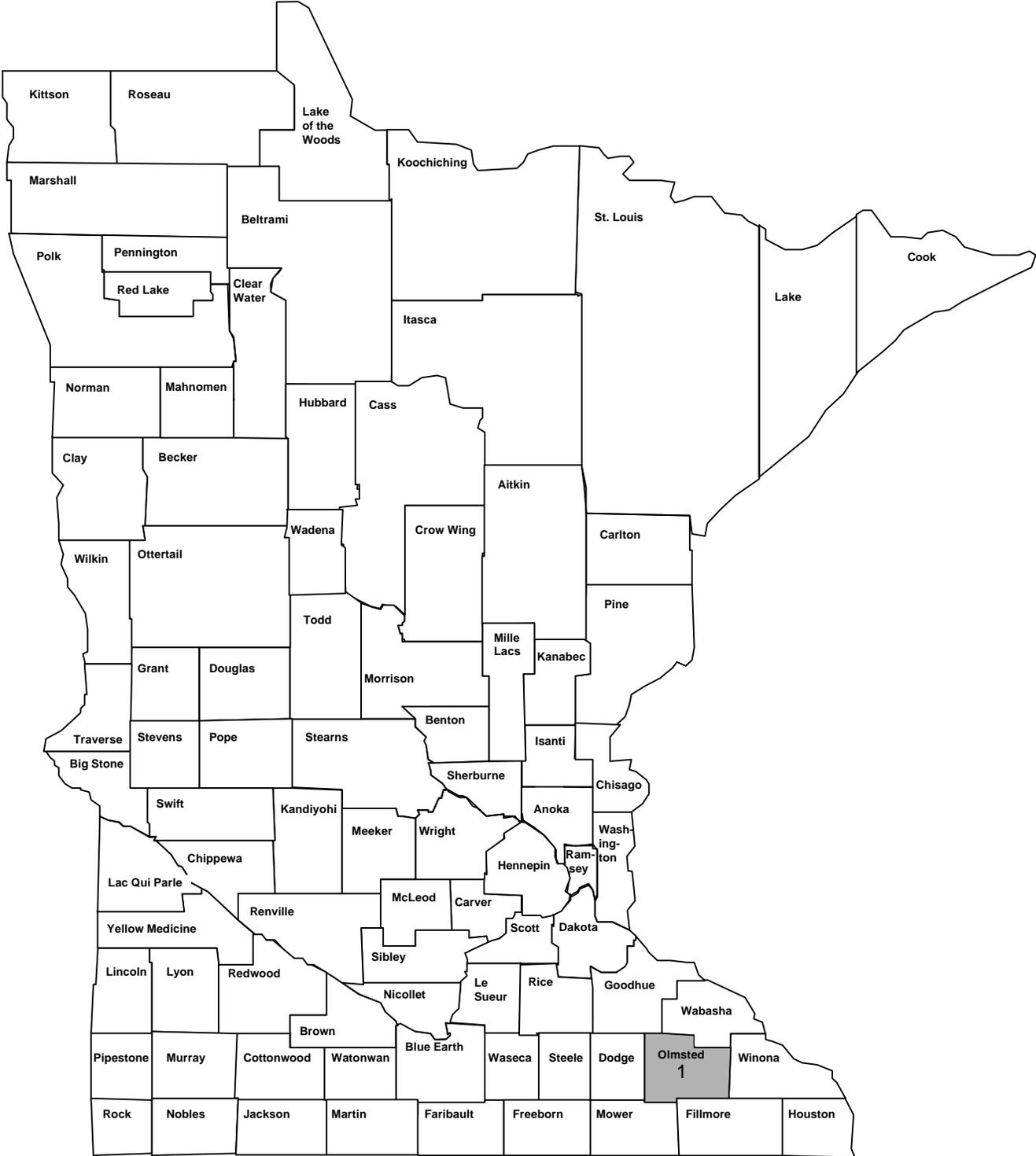


* Numbers on map add up to 47 because 37 of the 40 outbreaks involved single counties but three involved multiple counties (Crow Wing and St. Louis; Hennepin and Washington; and Anoka, Dakota, Hennepin, Ramsey, Scott, and Wright, respectively).

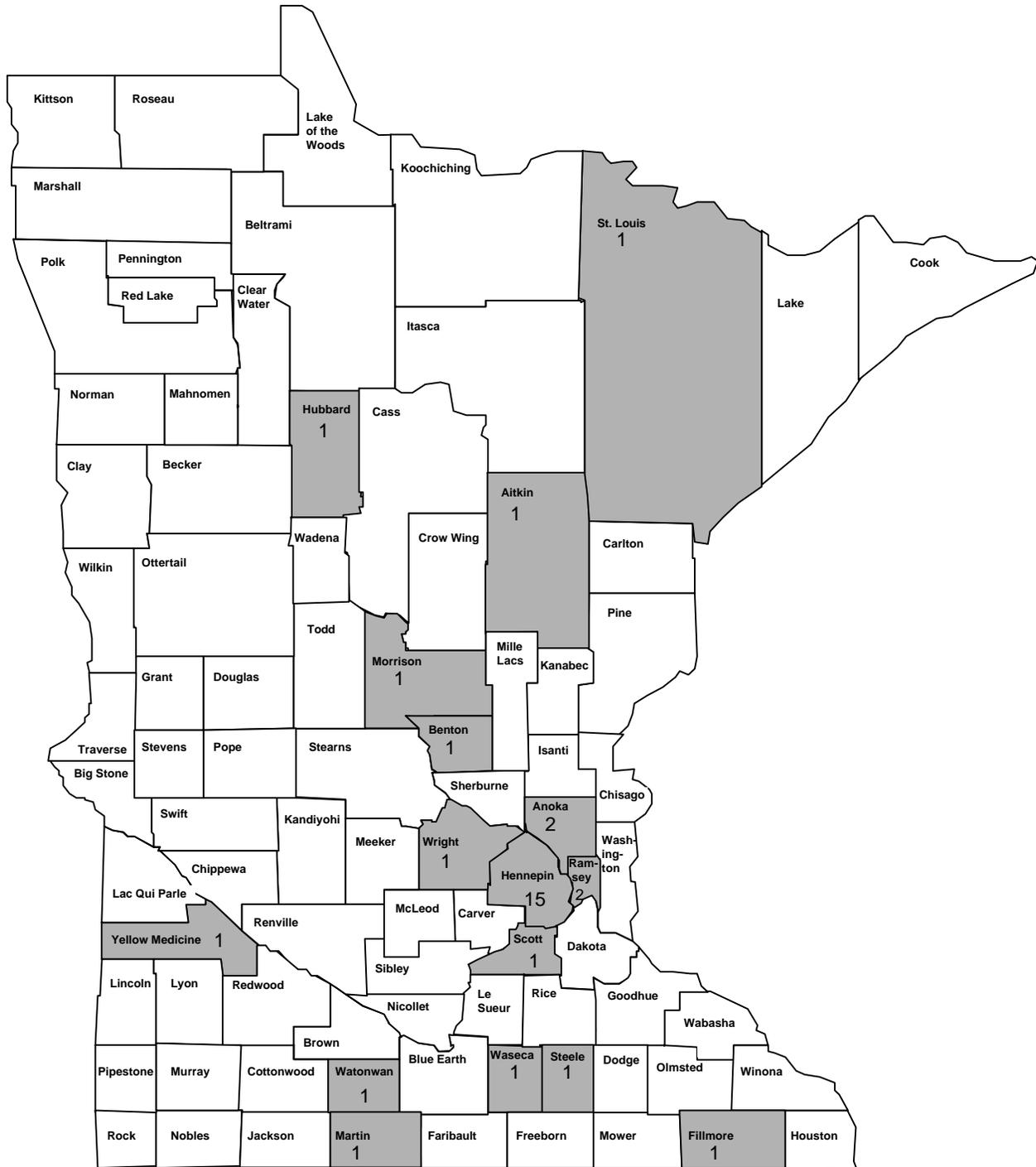
Probable Foodborne Outbreaks by County, Minnesota, 1999 (n=14)



Confirmed Waterborne Outbreaks by County, Minnesota, 1999 (n=1)



Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks by County, Minnesota, 1999 (n=31)



* Numbers on map add up to 32 because 30 of the 31 outbreaks involved single counties but one involved two counties (Anoka and Hennepin).

**Foodborne Illness Complaints
Minnesota, 1999**

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Aitkin County	0	0	0
Albert Lea, City of	1	0	1
Anoka County	20	0	20
* Becker County	1	0	1
* Beltrami County	0	0	0
* Benton County	4	0	4
Big Stone County	0	0	0
Bloomington, City of	28	37	65
* Blue Earth County	1	0	1
Brooklyn Park, City of	10	5	15
Brown County	0	0	0
* Carlton County	2	0	2
+ Carver County	8	0	8
Cass County	0	0	0
Chippewa County	2	0	2
+ Chisago County	2	2	4
Clay County	1	0	1
* Clearwater County	0	0	0
Cook County	2	0	2
Cottonwood County	0	0	0
* Crow Wing County	3	0	3
Crystal, City of	4	1	5
+ Dakota County	66	0	66
* Dodge County	0	0	0
Douglas County	3	0	3

Foodborne Illness Complaints Minnesota, 1999

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Duluth, City of	0	3	3
Edina, City of	11	0	11
Faribault County	0	0	0
* Fillmore County	0	0	0
* Freeborn County	1	0	1
Golden Valley, City of	2	0	2
Goodhue County	7	0	7
* Grant County	0	0	0
Hennepin County	47	15	62
Hopkins, City of	2	0	2
* Houston County	0	0	0
* Hubbard County	1	0	1
+ Isanti County	2	0	2
* Itasca County	1	0	1
* Jackson County	0	0	0
* Kanabec County	0	0	0
Kandiyohi County	3	0	3
* Kittson County	0	0	0
* Koochiching County	1	0	1
Lac Qui Parle County	0	0	0
Lake County	2	0	2
* Lake of the Woods County	0	0	0
Le Sueur County	0	0	0

**Foodborne Illness Complaints
Minnesota, 1999**

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Lincoln County	0	0	0
* Lyon County	1	0	1
* Mahnomon County	0	0	0
Maplewood, City of	8	0	8
* Marshall County	0	0	0
Martin County	0	0	0
* McLeod County	2	0	2
* Meeker County	0	0	0
* Mille Lacs County	1	0	1
Minneapolis, City of	53	39	92
Minnetonka, City of	16	0	16
Moorhead, City of	1	0	1
Morrison County	1	0	1
* Mower County	1	0	1
Murray County	0	0	0
New Brighton, City of	2	0	2
Nicollet County	0	0	0
Nobles County	0	0	0
* Norman County	0	0	0
Olmsted County	1	40	41
* Otter Tail County	2	0	2
* Pennington County	0	0	0

**Foodborne Illness Complaints
Minnesota, 1999**

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
+ Pine County	1	0	1
Pipestone County	0	0	0
* Polk County	0	0	0
Pope County	2	0	2
Ramsey County	33	5	38
* Red Lake County	0	0	0
Redwood County	0	0	0
* Renville County	0	0	0
* Rice County	4	0	4
Richfield, City of	8	0	8
Rock County	0	0	0
* Roseau County	0	0	0
St. Cloud, City of	4	1	5
St. Louis County	3	18	21
St. Louis Park, City of	8	0	8
St. Paul, City of	84	0	84
+ Scott County	5	0	5
* Sherburne County	5	0	5
* Sibley County	0	0	0
Stearns County	0	3	3
* Steele County	3	0	3
Swift County	0	0	0
* Stevens County	1	0	1

Foodborne Illness Complaints Minnesota, 1999

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Swift County	0	0	0
Todd County	0	0	0
* Traverse County	0	0	0
Wabasha County	0	0	0
Wadena County	0	0	0
Waseca County	0	0	0
Washington County	24	14	38
Watonwan County	0	0	0
Wayzata, City of	2	0	2
Wilkin County	0	0	0
Winona County	1	0	1
+ Wright County	7	0	7
Yellow Medicine County	0	0	0
Bureau of Indian Affairs	1	0	1
Food and Drug Administration	6	0	6
Minnesota Department of Agriculture	54	0	54
University of Minnesota	2	0	2
United States Department of Agriculture	4	0	4
TOTAL	589	183	772

* complaint faxed to a MDH District Office (n=35)

+ complaint faxed to MDH Environmental Health Services (n=91)

In 1999, the MDH Acute Disease Epidemiology Section (ADES) received 605 foodborne illness complaint calls from the public. Detailed information on symptoms and a 4-day food history was obtained from each caller (see form on next page), and the complaint was faxed to the appropriate jurisdiction for each restaurant, deli, grocery store, or other establishment named in the complaint. The 605 complaint calls taken by ADES resulted in 589 faxes sent to environmental health staff or local agencies. In addition, 183 foodborne illness complaints were sent to ADES from other agencies.

FOODBORNE ILLNESS COMPLAINT FORM

Stool kit delivered **G**

Foodborne Illness Report

Daily **G**

Minnesota Department of Health

Phone: (612) 676-5414 Fax: (612) 676-5730

Complaint date: ___/___/___ Tennessen: **Q** Reporter: _____

Agency: _____ Phone: _____ Fax: _____

First Name: _____ Last Name: _____ Age: _____ **Q** Female **Q** Male

Address _____ Zip: _____

Day phone: (_____) _____ Evening phone: (_____) _____

Occupation: _____ Daycare exposure: Yes No

Illness History: Illness onset: ___/___/___ Time: _____ Illness Recovery Date: ___/___/___ Time: _____

Vomiting Y N Onset date: ___/___/___ Time: _____ Vomiting recovery date: ___/___/___ Time: _____

Diarrhea Y N Onset date: ___/___/___ Time: _____ Diarrhea recovery date: ___/___/___ Time: _____

Number of stools per 24 hour period: _____ Cramps Y N Fever Y N temp: _____ Bloody stools Y N

Other symptoms: _____

Called healthcare provider: Y N Visited provider: Y N Please circle Office / ER Date of visit: ___/___/___

Provider requested stool sample: Y N Date stool submitted: ___/___/___ Result: _____ Hospitalized: Y N

Food History:

If only one person is ill; complete entire four day food history.

If ill persons live in the same household complete entire four day food history.

If more than one person is ill and they live in different households, then record only the common meals.

Date of Illness Onset: ___/___/___

Meal Time Foods and Drinks Consumed and Location (including home)

Brk: _____

Lun: _____

Sup: _____

Oth: _____

Day Prior to Illness Onset: ___/___/___

Meal Time Foods and Drinks Consumed and Location (including home)

Brk: _____

Lun: _____

Sup: _____

Oth: _____

Two Days Prior to Illness Onset: ___/___/___

Caller's name: _____

Meal Time Foods and Drinks Consumed and Location (including home)

Brk: _____

Lun: _____

Sup: _____

Oth: _____

Three Days Prior to Illness Onset of Illness: ___/___/___

Meal Time Foods and Drinks Consumed and Location (including home)

Brk: _____

Lun: _____

Sup: _____

Oth: _____

Establishment or Product Complainant Suspects (for products, include brand, size, flavor, UPC, purchase date & location)

Number of persons exposed: _____ Number ill: _____

Did complainant call the establishment: Yes No

History of others Ill:

First name: _____ **Last name:** _____ **Age:** _____

Address: _____ **Phone:** _____

Illness onset date: ___/___/___ Onset time: _____ Recovery date: ___/___/___ Recovery time: _____

Vomiting Y N Onset date: ___/___/___ Time: _____ Vomiting recovery date: ___/___/___ Time: _____

Diarrhea Y N Onset date: ___/___/___ Time: _____ Diarrhea recovery date: ___/___/___ Time: _____

Number of stools per 24 hour period: _____ Cramps Y N Fever Y N temp: _____ Bloody stools Y N

Other symptoms: _____

Foods eaten at common event:

Agencies Notified MDH-EHS MDH-District Office MN Dept of Ag FDA USDA

Local Agencies: _____

Comments _____

Complainant Expectations: Follow-up restaurants/establishments requested **Or** MDA Follow-up requested

Complaint to be logged in database only

MDH Use Only: Stool collected: ___/___/___ Received at MDH: ME I M

Results: Calicivirus O157 Shig Salm Campy Yersinia Other _____ Negative

Notified case: ___/___/___ Notified local agency: ___/___/___

Original Caller: _____

History of others Ill:

First name: _____ **Last name:** _____ **Age:** _____

Address: _____ **Phone:** _____

Illness onset date: ___/___/___ Onset time: _____ Recovery date: ___/___/___ Recovery time: _____

Vomiting Y N Onset date: ___/___/___ Time: _____ Vomiting recovery date: ___/___/___ Time: _____

Diarrhea Y N Onset date: ___/___/___ Time: _____ Diarrhea recovery date: ___/___/___ Time: _____

Number of stools per 24 hour period: _____ Cramps Y N Fever Y N temp: _____ Bloody stools Y N

Other symptoms: _____

Foods eaten at common event: _____

History of others Ill:

First name: _____ **Last name:** _____ **Age:** _____

Address: _____ **Phone:** _____

Illness onset date: ___/___/___ Onset time: _____ Recovery date: ___/___/___ Recovery time: _____

Vomiting Y N Onset date: ___/___/___ Time: _____ Vomiting recovery date: ___/___/___ Time: _____

Diarrhea Y N Onset date: ___/___/___ Time: _____ Diarrhea recovery date: ___/___/___ Time: _____

Number of stools per 24 hour period: _____ Cramps Y N Fever Y N temp: _____ Bloody stools Y N

Other symptoms: _____

Foods eaten at common event: _____



Foodborne Disease Outbreak Investigation Guidelines

Minnesota Department of Health

Phone: (612) 676-5414 Fax: (612) 676-5743

The Minnesota Department of Health (MDH) has developed a model for investigating foodborne illness using a centralized group of interviewers (Team Diarrhea) coordinated with local environmental health assessment of the establishment(s) involved in the outbreak. This approach allows us to rapidly respond to reports of outbreaks, standardize outbreak investigations, maintain a statewide database of foodborne disease and distribute information quickly and consistently.

When local agencies learn of a possible outbreak, they should notify the Minnesota Department of Health immediately to initiate an appropriate outbreak response.

During investigations, epidemiologists at MDH and local agencies will work with a network of environmental health specialists and other health agencies to evaluate critical elements of the outbreak. Environmental health inspectors and field epidemiologists will focus on restaurant inspection, interviewing employees, and assessing food preparation and safety, while the central group of epidemiologists will coordinate patron interviews, stool collection and testing, and data analysis. MDH is responsible for compiling and storing outbreak data and for summarizing outbreaks; however, local agencies are invited to write or contribute to all final reports. MDH has an outbreak report template available for agencies that choose to write their own final reports. All final reports should be faxed or mailed to MDH within a month of completion of the outbreak investigation. Minnesota outbreak reports will be included in the annual Minnesota Department of Health Gastroenteritis Outbreak Summary. MDH will forward outbreak information to the Centers for Disease Control and Prevention for national archiving. Detailed and thorough outbreak reports are critical in assessing the burden of foodborne disease outbreaks in Minnesota and nationally. This model of foodborne disease outbreak investigation, with a core group of epidemiologists and an extensive network of environmental health specialists, local, state and federal health agencies, and field epidemiologists distributed across the state provides Minnesotans with an efficient foodborne disease surveillance system.

Investigation Guidelines

When investigating outbreaks, MDH uses the following guidelines to ensure a prompt and appropriate response to possible outbreaks and to obtain consistent and useful data from every investigation.

Particular attention has been given to areas of investigations that are easily and frequently overlooked, but which are critical to agent and vehicle identification. A sample outbreak investigation questionnaire is attached. Epidemiologic data often offers the only evidence of an outbreak source and the responsible organism. Therefore, interviews with all cases and controls must be detailed, thorough, and consistent.

I. Patron Investigation

Tennessee Statements

The Tennessee statement is a requirement by the Minnesota Data Practices Act to inform the subject being interviewed of:

- ! the purpose of the interview
- ! who will have access to the information
- ! the intended use of the information
- ! any consequence of providing or not providing the requested information

The following questions capture the essential data needed to assess outbreaks caused by bacterial, viral, and parasitic organisms. The information below should be obtained in every interview.

1) Demographic and locating information on respondent

- # Name and address
- # Day and evening phone numbers
- # Date of birth
- # Gender

2) Illness History (verify that controls had no gastrointestinal symptoms)

- # Fever (Yes/No) (Try not ask if the person felt “feverish.” Ask only if the person “had a fever.”)
- # Temperature (highest)
- # Diarrhea (Yes/No)
- # Date of diarrhea onset
- # Time of diarrhea onset, in military time
- # Maximum number of stools in a 24-hour period (This is critical information because

- the definition of diarrhea is **\$3 stools in a 24-hour period**)
- # Date of diarrhea onset
 - # Time of diarrhea onset, in military time
 - # Date of last episode of diarrhea
 - # Time of last episode of diarrhea
 - # Vomiting (Yes/No)
 - # Date of vomiting onset
 - # Time of vomiting onset, in military time
 - # Date of last episode of vomiting
 - # Time of last episode of vomiting, in military time
 - # Bloody stools (Yes/No)
 - # Abdominal cramps (Yes/No)
 - # First symptom
 - # Date of onset of first symptom--necessary in order to calculate the incubation period
 - # Time of first symptom (The specific hour of onset, in military time, is necessary to calculate the incubation period)
 - # Date of recovery--necessary in order to calculate the duration of illness
 - # Time of recovery (The specific hour of recovery, in military time, is necessary to calculate the duration of illness)
 - # Was person hospitalized? (Yes/No)
 - # If yes: where, admission date, discharge date
 - # Did person visit a physician? If yes, physician's name and phone number.
 - # Did person submit a stool culture? If yes, when.

3) Exposure History

- # Ask about consumption of **every food** available to people involved in the outbreak.
- # Ask specifically about **ice and water** consumption at every meal being evaluated.
- # Ask specifically about **ice and water** consumed at any time other than at meals.
- # Ask about all events associated with the outbreak.

Example: If the outbreak is associated with a wedding, ask about attendance at any showers, pre-wedding parties, the rehearsal dinner and the wedding reception. Occasionally, there may be two case clusters that need to be teased out in the epidemiological investigation. For example, one group may become infected at the bridal shower, and the organism may be transmitted at the wedding reception by a food vehicle such as the wedding cake made by the groom's sister the morning before the wedding.

4) Stool Cultures

Laboratory detection is most sensitive when samples are collected early in the course of illness. Always obtain stool samples as soon as possible when an outbreak is suspected. When this is not possible, samples should still be collected, even from persons whose symptoms have resolved. **Cases may continue to shed the bacteria or viruses for several days after recovery.** Persons with asymptomatic infections may excrete the organism for months.

Ideally, stool samples should be obtained from 4 to 6 cases. Samples should be refrigerated but **NOT FROZEN** until they are submitted to the laboratory. The exception to this is when a bacterial pathogen is suspected and specimens will not be submitted for several days, samples should be frozen until they are sent to MDH. For example, if stool kits are given to cases in a suspected E. coli O157:H7 outbreak on Friday and will not be delivered to MDH before Monday, samples should be frozen.

A viral pathogen (e.g., calicivirus) may be suspected when the outbreak is characterized by:

- 1) incubation period of 24-48 hours, and
- 2) vomiting in at least 50% of cases or vomiting more frequent than fever, and
- 3) duration < 2 days

A bacterial pathogen (e.g., Salmonella, E. coli O157:H7) may be suspected when the outbreak is characterized by:

- 1) incubation period of 3 days or more
- 2) fever or bloody stools
- 3) duration > 2 days

II. Investigation at the Food Service Establishment

- 1) When interviewing food workers, Tennessee statements should be written to reflect the needs of the investigation to share illness history information with the establishment management.
- 2) Obtain illness histories directly from **ALL** food workers and catering staff. Ask employees about illness within 10 days of the event (in some situations, such as an outbreak involving ongoing Salmonella transmission in a restaurant, determine if there was any employee illness in the relevant time period). Please do not rely on management assessment of illness in employees, but **interview all employees directly**. Ask about gastrointestinal illness in the families of food workers, and obtain detailed information about the foods each food worker assisted in preparing for the event and any foods they

may have consumed. Obtain stool samples from all employees who were ill prior to or following the event.

- 3) Ask management and kitchen staff about food preparation and storage practices, including:

- # food worker tasks (do workers have multiple tasks, do servers prepare any food, etc.)
- # food preparation (who, when, how, shared cutting surfaces, shared utensils, etc.)
- # bare-handed or glove-handed contact by food workers
- # pre-cooking of any dishes
- # food storage
- # cooking methods
- # cooling methods
- # reheating methods
- # warming trays used
- # serving/delivery (self serve salads, hot/cold buffet table, Sterno heaters, ice beds, etc.)
- # cleaning surfaces, dishes (who, when, how)

- 4) Food samples are rarely tested, even when epidemiologically implicated. Occasionally, the Minnesota Department of Agriculture tests food, but MDH relies almost exclusively on stool samples from cases.

III. Report Summarizing the Event

The final report will be entered into the statewide outbreak database and included in the state's annual summary of foodborne disease outbreaks. Every report includes the following information:

Background Section:

- # Date the investigating agency was notified of outbreak
- # Description of the initial report made to the investigating agency
- # Date of the event

Methods Section:

- # Who provided information about attendees, including names and phone numbers
- # Other agencies notified of the outbreak and investigation
- # Number of people who attended the event
- # Case definition (The standard definition: vomiting or diarrhea after attending the event)
- # Number of people interviewed
- # Number who met the case definition among those interviewed

- # Number of stools collected for testing
- # Pathogens tested for in stools

(Note: When possible, all persons interviewed should be selected **randomly** from guest lists, not by word of mouth from cases. Cases are likely to mention other ill persons which may bias the results. At least one control should be interviewed per case, and preferably two or more controls per case.)

Results Section:

- # Percentage of interviewed cases with Fever
- # Percentage of interviewed cases with Diarrhea (≥ 3 loose stools in a 24-hour period)
- # Percentage of interviewed cases with Vomiting
- # Percentage of interviewed cases with Bloody stools
- # Percentage of interviewed cases with Abdominal cramps
- # Incubation range
- # Median incubation
- # Duration range
- # Median duration
- # Results of stool testing
- # Food items or events associated with illness.
- # Odds ratio of implicated item(s)
- # Confidence intervals for implicated item(s)
- # p values for all implicated item(s)
- # All relevant information found in the establishment investigation
- # Results of food worker interviews
- # Results of food worker stool cultures

Conclusion Section:

- # Etiologic agent
- # Discussion of route of transmission (contaminated food)
- # Contributing factors (cold food items contaminated by infected food worker; person to person transmission; undercooked food; improperly stored food, etc.)
- # Defense of conclusion, if needed (for example, how do the symptoms, median incubation period and median duration suggest a causal agent). Discuss all plausible sources of contamination when necessary.

**SAMPLE FOODBORNE OUTBREAK
INVESTIGATION QUESTIONNAIRE**

**Name of Outbreak
City, Minnesota
Day, Month, Year**

Tennessee: Y N

Date: _____

Interviewer: _____

Name (Last, First): _____ Date of birth ____/____/____ Sex: F M

Street: _____ City: _____ County: _____

State: _____ Zip code: _____ Phone (H) _____ (W) _____

Case Illness History: Illness onset: Date: ____/____/____ Time: _____ Recovery: Date: ____/____/____ Time: _____

Vomiting Y N Onset: Date: ____/____/____ Time: _____ Cramps Y N Fever Y N temp: _____ Bloody stools Y N

Diarrhea Y N Onset: Date: ____/____/____ Time: _____ Maximum number of stools per 24 hour period: _____

Diarrhea Recovery Date: ____/____/____ Time: _____ (Diarrhea duration: _____ days / hours)

First symptom: _____

Other symptoms Y N specify: _____ Onset of other symptoms: Date: ____/____/____ Time: _____

Called provider: Y N Visited provider: Y N Please circle: Clinic / ER Date of visit ____/____/____

Provider requested stool sample Y N Stool sample submitted: Y N ____/____/____ Hospitalized over night: Y N

Food History (for cases and controls): Date of meal: ____/____/____ Time of meal (military): _____

[sample menu]

Fried chicken	Y N	Soda	Y N	Type(s): _____
Ham	Y N	Fruit punch	Y N	
Au gratin potatoes	Y N	Coffee	Y N	
Baked beans	Y N	Water	Y N	
Potato salad	Y N	Ice	Y N	
Tossed salad	Y N	Other food	Y N	
dressing: _____	Y N	or drink:	_____	
Angel food cake	Y N			

Did any one in your household experience vomiting or diarrheal illness in the week prior to this dinner (party, wedding...): Y N

Name (last, first)	Age	Onset date
_____	_____	____/____/____
_____	_____	____/____/____
_____	_____	____/____/____