MINNESOTA DEPARTMENT OF HEALTH 2001 GASTROENTERITIS OUTBREAK SUMMARY

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

Compiled by:

Minnesota Department of Health
Infectious Disease Epidemiology, Prevention and Control Division
Acute Disease Investigation and Control Section
Foodborne, Vectorborne, and Zoonotic Diseases Unit
717 Delaware Street S.E.
Minneapolis, MN 55414
Phone: (612) 676-5414
Fax: (612) 676-5730
Internet: www.health.state.mn.us

Minnesota Department of Health
2001 Gastroenteritis Outbreak Summary

Table of Contents

MINNESOTA DEPARTMENT OF HEALTH
2001 GASTROENTERITIS OUTBREAK SUMMARY

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.

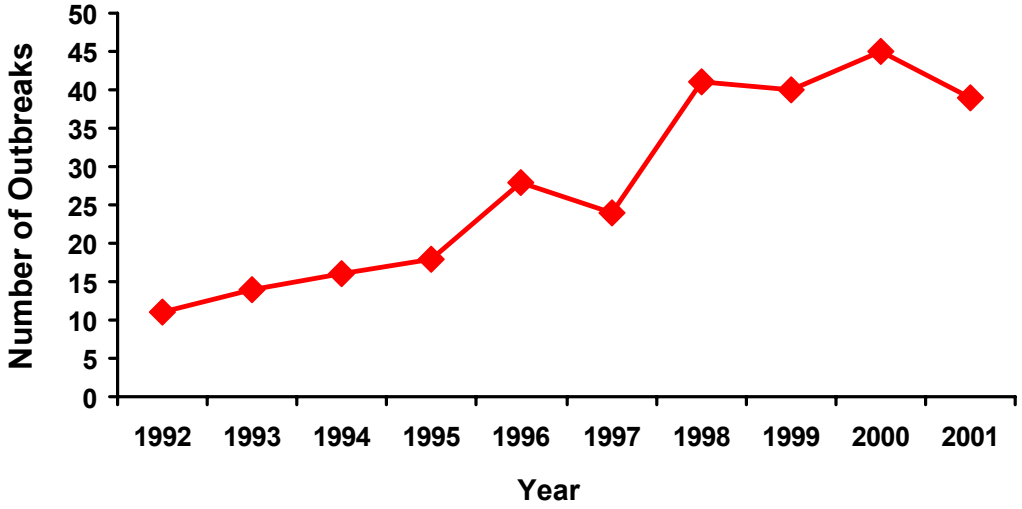
CONFIRMED AND PROBABLE NON-FOODBORNE, NON-WATERBORNE OUTBREAKS

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

Summary

In 2001, the Minnesota Department of Health (MDH) Acute Disease Investigation and Control Section identified a total of 112 outbreaks of gastroenteritis involving at least 1,885 cases of illness. The 112 outbreaks were classified as follows (see page 1 for definitions): 39 confirmed foodborne outbreaks, 21 probable foodborne outbreaks, four confirmed waterborne outbreaks, one probable waterborne outbreak, and 47 non-foodborne, non-waterborne gastroenteritis outbreaks. Over the past 10 years, the median number of confirmed foodborne outbreaks identified per year was 26 (range, 11 to 45). However, over the past four years, the median number of confirmed foodborne outbreaks identified per year was 41 (range, 39 to 45).

Number of Confirmed Foodborne Outbreaks Per Year, Minnesota, 1992-2001



One factor that may have contributed to the rising number of identified outbreaks over time is enhanced surveillance for outbreaks. In 1998, the toll-free MDH Foodborne Illness Hotline was implemented. In 2001, 14 (36%) of the 39 confirmed foodborne outbreaks were initially reported to MDH via the hotline.

The median number of cases of illness identified per confirmed foodborne outbreak in 2001 was 10 (range, 2 to 86).

Of the 39 confirmed foodborne outbreaks, 25 (64%) were either laboratory-confirmed (n=17) or epidemiologically defined (n=8) outbreaks of Norwalk-like calicivirus gastroenteritis. Six (15%) of the confirmed foodborne outbreaks were due to the following bacterial pathogens: *Salmonella* (n=3), *Campylobacter* (n=1), *E. coli* O157:H7 (n=1), and *Shigella* (n=1). Seven outbreaks were caused by foodborne intoxications (*Bacillus cereus*, *Clostridium perfringens*, and scombrotoxin). One outbreak was of unknown etiology.

The importance of Norwalk-like caliciviruses as a cause of foodborne disease outbreaks in 2001 continues a pattern that has been observed for over two decades in Minnesota. During 1981-2001, 192 (46%) of 419 confirmed outbreaks of foodborne disease were due to Norwalk-like caliciviruses, while 90 (21%) confirmed foodborne outbreaks were caused by infectious bacterial pathogens such as *Salmonella* and *E. coli* O157. Therefore, over this 21-year period the combined number of foodborne outbreaks due to infectious bacterial agents was less than half the number of foodborne outbreaks due to calicivirus. A recent study by the Centers for Disease Control and Prevention found that calicivirus was

detected in 93% of outbreaks of nonbacterial gastroenteritis (Fankhauser RL et al, 2002).

The majority of calicivirus outbreaks were due to ill food workers handling ready-to-eat food items such as salads and sandwiches in restaurant or catering settings. Twenty-two (85%) of the foodborne calicivirus outbreaks in 2001 occurred in restaurants or at catered events. Ill food workers or food workers with ill household members were implicated in 11 of those outbreaks. Prevention of further disease transmission in these outbreaks is accomplished by emphasizing good handwashing procedures, minimizing bare-hand contact with ready-to-eat food items, and excluding ill employees from work until 72 hours after recovery.

There were three confirmed foodborne outbreaks due to *Salmonella* in 2001. In April, attendees of a food stylist convention became ill with *S.* Enteritidis infection after consuming eggs Benedict prepared with unpasteurized shell eggs. The second outbreak in July took place in a restaurant and was also caused by *S.* Enteritidis associated with shell eggs. In August, another outbreak of salmonellosis at a buffet-style restaurant was caused by *S.* Newport. Although no single food vehicle was identified, the investigation revealed ample opportunity for cross-contamination of ready-to-eat foods by raw chicken products.

Two of the four confirmed waterborne outbreaks in 2001 were due to non-community drinking water supplies contaminated with copper. In both outbreaks, problems with the water distribution systems were identified and corrected. The other two confirmed waterborne outbreaks (caused by calicivirus and *E. coli* O157:H7, respectively) were associated with swimming beaches.

There were 47 non-foodborne, non-waterborne outbreaks of gastroenteritis identified in 2001. Two of these outbreaks were due to exposure to animals or animal products: calves at a day camp in one outbreak (due to multiple enteric pathogens), and owl pellets in elementary school science clubs in the other outbreak (due to *Salmonella* Typhimurium). However, most outbreaks in the non-foodborne, non-waterborne category were associated with person-to-person transmission of enteric pathogens in daycares, schools, nursing homes, and other facilities. There were 20 outbreaks of shigellosis associated with daycares and elementary schools, causing at least 249 illnesses, of which 141 were culture-confirmed. These cases of shigellosis accounted for 29% of the 493 *Shigella* infections reported in Minnesota in 2001.

CONFIRMED FOODBORNE OUTBREAKS

(1)
Gastroenteritis Associated with a Restaurant

January Olmsted County

On January 5, 2001 a restaurant owner notified a sanitarian at Olmsted County Public Health Services (OCPHS) that four people who ate lunch on January 3 had complained of illness after eating. In addition, a member of this group was aware of one person who ate the evening of January 3 and also became ill. Other than eating at the restaurant, the original group did not have common exposures. Based on this information, an investigation was initiated.

An on-site visit was made to the restaurant the afternoon of January 5. A complete menu of the foods served at the restaurant was obtained from the restaurant owner. Credit card receipts were used to compile a list of restaurant patrons to interview. Sanitarians interviewed food workers and assessed the facility and food preparation practices. Patron interviews were completed to obtain illness histories and food exposures using a standard questionnaire. Stool samples were requested from those reporting illness. For the purposes of this investigation, a case was defined as a person who experienced diarrhea (≥ 3 loose stools in a 24-hour period) or vomiting after eating at the restaurant. Although stool samples were requested from those reporting illness, no stool samples were obtained.

Thirty-two persons were interviewed; of these, 12 (38%) met the case definition. Symptoms included diarrhea (100%), abdominal cramps (58%), nausea (33%), vomiting (25%) and chills (25%). The incubation ranged from 11.5 to 66 hours, with a median of 16 hours. The duration ranged from 3 to 55 hours, with a median of 24 hours. Nine of the 12 cases had incubations that were less than 24 hours.

All of the cases ate at the restaurant over a 9 hour time period (lunch and dinner) on January 3. No foods were statistically associated with illness. No food samples were available for analysis from the suspect meal day. The rice and refried beans were the only foods eaten by all of the cases. Both rice and beans were reported to each be prepared two times each day: once for lunch and once for dinner. No carryover from one day to the next was reported to have occurred. During the visit, a recently prepared pan of beans was observed being transferred and mixed with a pan hot held on the steam table. The temperature of the mixed pan of beans was 170°F. Rice was at 163°F on the steam table. Conditions at the restaurant which required the manager's attention were food worker hand contact with chips and shredded cheese without evidence of handwashing prior to contact, and containers of raw chicken and marinating chicken stored on the walk-in cooler floor.

Based on the symptoms, incubation period and foods eaten, this outbreak was consistent with foodborne intoxications caused by *Bacillus cereus* or *Clostridium perfringens*. Although no specific foodhandling practice was identified that may have contributed to the illness, a deviation from the routine practices may have occurred with either the rice or refried beans. Recommendations were given to the restaurant operator to provide additional training to all food workers involved in the preparation of the rice and beans to assure the preparation is consistent with safe foodhandling practices.

(2)
Calicivirus Gastroenteritis Associated with a Restaurant

January Anoka County

On Monday, January 8, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a complaint concerning a group of three people that ate together at a restaurant in Blaine on Friday, January 5 and became ill with vomiting and diarrhea approximately 36 hours later. The complaint was immediately forwarded to Anoka County Community Health and Environmental Services (ACCHES). ACCHES then reported that they also had received two separate complaints about the restaurant on that day. In addition, ACCHES had received a complaint about the restaurant on Thursday, January 4 that had resulted in a sanitarian visiting the restaurant on Friday, January 5. At that time, the sanitarian had reviewed food preparation and found adequate food holding temperatures and adequate handwashing facilities. Requirements for reporting of patron illness and ill employee documentation were discussed.

Epidemiologists from MDH interviewed complainants by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. Stool samples were collected from three cases and submitted to MDH for bacterial and viral testing.

ACCHES sanitarians visited the restaurant on the afternoon of Tuesday, January 9 to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures. At the time of this inspection, at least three ill employees were working. Upon ACCHES recommendations, the restaurant voluntarily closed in order to assess all employees for current or recent illness; to discard any ready-to-eat cold food items; and for environmental cleaning. Food workers were interviewed to determine illness history of themselves and family members. Ill employees were excluded from working until at least 72 hours after recovery. Stool samples were collected from 15 food workers and submitted to MDH for bacterial and viral testing.

By Wednesday, January 10, a total of 20 cases from eight separate parties had been identified from complaints phoned in to ACCHES or MDH. Meal dates ranged from Tuesday, January 2 to Sunday, January 7. The majority of cases (n=12, 60%) ate on Friday, January 5. All 20 cases (100%) had diarrhea, and 16 (80%) had vomiting. The median incubation was 32.5 hours (range, 12 to 36 hours). Most cases were still ill at the time of their interview, so duration of illness could not be calculated. No one food item was common among all cases, but at least 12 (60%) of the 20 cases ate salads, and consumption of other ready-to-eat cold food items (e.g., sandwiches, nachos) was frequently reported by the cases. Stool specimens collected from three restaurant patrons were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Two of the three specimens tested positive for calicivirus.

In response to media reports on the outbreak, MDH received several phone calls from ill restaurant patrons. Sixty-six additional probable cases were identified in this manner. Reported meal dates ranged from Saturday, December 30 to Tuesday, January 9 (the date the restaurant voluntarily closed). The majority of callers (n=43, 65%) reported meal dates ranging from Friday, January 5 to Sunday, January 7. The single most commonly reported meal date (n=29, 44%) was Sunday, January 7. About 80 other patrons contacted ACCHES and the restaurant, but were not systematically interviewed. At least three of these people reported being hospitalized overnight for their illnesses. In all, an estimated 166 ill persons were identified.

Ninety-seven food workers were interviewed by ACCHES; 67 (69%) reported no illness in themselves or their household members. Twenty-three (24%) reported that they had recently been ill with gastrointestinal symptoms, with dates of illness ranging from late December 2000 through the second week of January 2001. Several reported working at the restaurant while ill, some for several days. In addition, seven food workers (7%) reported that they were not ill but had had ill household members. Therefore, 30 food workers (31%) reported gastrointestinal illness in themselves and/or their household contacts. Of the 15 workers who submitted stool kits, four (27%) were positive for calicivirus. The genetic sequence of calicivirus isolated from food workers was identical to the sequence isolated from patrons. According to ACCHES, the restaurant did not produce any written documentation on their employee illness policy as it existed prior to the outbreak. Management reported that sick employees were expected to stay home. According to ACCHES, restaurant employees reported that they felt pressured to work even if ill and were expected to either show up for their scheduled shift or find their own replacement. Inadequate handwashing practices were also observed by ACCHES. The restaurant reopened on Friday, January 12 after voluntarily closing on January 9. No further illnesses were reported subsequent to the restaurant reopening.

This was an outbreak of calicivirus gastroenteritis associated with a restaurant in Blaine. The source of the outbreak was ill food workers, and the vehicles included multiple ready-to-eat food items that required hand contact during preparation. Ongoing transmission to patrons likely occurred over at least a 7-day period.

(3)
Calicivirus Gastroenteritis Associated with a Restaurant

January Hennepin County

On Monday, January 8, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a report of illness among a group of seven people from two different households who shared a meal at a restaurant in Bloomington on the evening of Saturday, January 6. They denied any other common meals. Items consumed included steak, salad, onion rings, and beverages. The complaint was faxed to City of Bloomington Environmental Health (CBEH) and an investigation was initiated. MDH and CBEH staff interviewed members of the group by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) plus one other symptom after eating at the restaurant. CBEH sanitarians inspected the restaurant to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures, including the critical food safety issues for the food items consumed by the ill persons. Three cases submitted stool samples to MDH for bacterial and viral testing. A reservation list was obtained from restaurant management, but CBEH staff was unable to contact any other persons who had eaten at the restaurant on January 6.

All seven persons from the group were interviewed, and four of the seven (57%) met the case definition. All four cases (100%) had vomiting, three (75%) had diarrhea, three (75%) had cramps, one (25%) reported chills, and no one reported fever or bloody stools. No one was hospitalized. The median incubation period was 35 hours (range, 33 to 56 hours). Because the cases were still ill at the time of interview, duration of illness was not assessed. No food items were statistically associated with illness. The stool samples collected from three cases were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*; all three samples were positive for calicivirus.

No recent employee illnesses were identified from an ill call log at the restaurant. When asked by the

sanitarian, the manager denied any recently ill employees. A few kitchen employees that were questioned by the sanitarian also denied recent illness.

Critical foodhandling violations were noted at the restaurant. The violations included improper use of disposable gloves and lack of proper handwashing. Food workers were observed handling raw meat and plates, and then wiping gloved hands on soiled aprons, without changing gloves and washing hands. CBEH staff issued orders to correct these violations and addressed proper handwashing procedures and proper use of disposable gloves with management and with food workers during the inspection. CBEH staff also offered to assist management with future food safety training for food workers at the establishment.

This was an outbreak of calicivirus gastroenteritis associated with a restaurant. No specific food vehicle or source of contamination was confirmed; however, food workers were not systematically interviewed about recent gastrointestinal illness in themselves or in their households. The poor foodhandling and handwashing practices observed at the restaurant were plausible contributing factors to the outbreak.

(4)
***Clostridium perfringens* Intoxications Associated with Beef Stew**

January Anoka County

On January 16, 2001 the Minnesota Department of Health (MDH) was notified by Anoka County Community Health and Environmental Services Department of a complaint of illness in persons attending a ski and catered meal event at an Anoka County park on January 12. The event was catered by a business in Baxter. An investigation was initiated on January 16. Lists of food items served and event attendees were obtained. Epidemiologists from MDH interviewed event attendees by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after the event. A sanitarian from MDH inspected the caterer's facility and reviewed food preparation procedures on January 19. No food or stool samples were available for testing.

Thirty-two persons who attended the event were interviewed. Four persons who experienced mild gastrointestinal symptoms but did not meet the case definition were excluded from the analysis. Of the remaining 28 attendees, 18 (64%) met the case definition. Eighteen cases (100%) reported diarrhea, and one (6%) reported fever. No cases experienced vomiting or bloody stools. The median incubation period was 9 hours (range, 7 to 15 hours). The median duration of illness was 17 hours (range, 4 to 100 hours).

The meal consisted of beef stew, garden salad, bread cookies, bars, brownies, hot cocoa, coffee, milk, and water. Consumption of beef stew was statistically associated with illness (18 of 18 cases vs. 3 of 10 controls; odds ratio, undefined; 95% confidence interval lower limit, 4.88; $p < 0.001$). No other foods, beverages, or ice were associated with illness.

Inspection of the catering facility revealed that food preparation was done in an unlicensed mobile food unit parked on the operator's property. Electrical power to operate a small domestic refrigerator and a two-burner hot plate was supplied by an extension cord. The unit was unheated and contained no meaningful food preparation space or handwashing facilities. According to the operator, the first batch of stew was made in two 1.5 gallon pots on January 11. The pots were put into the refrigerator for about one hour to cool and then transferred into plastic bags, which were left open inside the refrigerator. On

the morning of January 12, an additional batch of stew was made to accommodate additional persons expected to attend the event that evening. Some of the stew meat from the previous days production was added to the stew made on January 12. The final stew product made on January 12 was placed in a 4-inch deep steam table pan and then placed in an insulated food container about 11:30 A.M. Before leaving for Anoka County, plastic bags of stew were removed from the refrigerator and placed in a chest cooler. Upon arrival at the site about 5:30 P.M., problems were encountered reheating the stew. The two-burner hot plate repeatedly tripped the electrical circuit breaker. The 4-inch pan was placed on a sterno-fired chafing unit. Serving started about 7:00 P.M. and ended about 8:15 P.M. Due to the problems in reheating the stew, the stew from the plastic bags was added directly to the chafing dish in an attempt to heat the product. No food product temperatures were taken during preparation, cooling, holding, or reheating of the stew.

An administrative hearing was held concerning the operation of a catering service without a proper license, inspections or facility. The hearing resulted in the operator being fined, with orders to discontinue operation of the catering service.

The epidemiologic and clinical characteristics of this outbreak are consistent with an etiology of *Clostridium perfringens* intoxication. The identified vehicle of beef stew and the foodhandling errors identified also support the etiology of *C. perfringens*.

(5)
Calicivirus Gastroenteritis Associated with a Restaurant

February Dakota County

On February 6, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received independent complaints from two groups of people who reported gastrointestinal illness after eating at a restaurant in Apple Valley on February 2. An investigation was initiated on February 6.

Epidemiologists from MDH interviewed persons from the two parties by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. MDH sanitarians inspected the restaurant on February 6. MDH sanitarians and MDH epidemiologists interviewed restaurant employees about recent gastrointestinal illness and job duties. Stool specimens were collected from one patron, two restaurant employees, and an employee's child for bacterial and viral testing.

Four persons were interviewed (two from each party that complained), and all four met the case definition. All reported diarrhea and vomiting, two of three (67%) reported cramps, and one of two (50%) reported fever. The median incubation period was 33 hours (range, 30 to 38 hours). The median duration of illness was 55 hours (range, 51 to 56 hours). Two persons reported visiting a health care provider for their illness. A stool specimen collected from a restaurant patron tested positive for calicivirus and tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*.

The cases ate a variety of foods: chicken burrito with black beans, rice, sour cream, salsa, guacamole and chips; steak burrito with peppers, onions, rice, sour cream, salsa, guacamole and chips; beef burrito with rice, sour cream, salsa and cheese; or beef burrito with beans, rice, sour cream, salsa and cheese.

Twenty-four restaurant employees were interviewed. Eight (33%) reported gastrointestinal illness with onsets ranging from January 21 to February 9. A detailed symptom history was obtained on seven of the

eight employees. All seven reported diarrhea, three (43%) reported vomiting, and one (14%) reported fever. The median duration of illness was 48 hours (range, 22 to 176 hours). One employee with a history of gastrointestinal illness reported having an ill child at home at the time of the interview. Two employees and the ill child submitted stool specimens for testing. The three stool specimens tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool from one of the employees and the ill child tested positive for calicivirus. The viral sequence from child's and the patron's specimen were identical. The virus from the employee's stool was not sequenced.

The inspection of the establishment did not reveal any critical violations. The establishment maintained a log of illness reported by employees, but the log indicated that no employees had reported illness between January 21 and February 3. The establishment also kept daily logs of food temperatures, employee handwashing, and disposable glove use. The establishment encouraged glove use for food preparation, but employees did not consistently wear gloves.

As a result of the inspection and investigation, the following actions were taken: all ready-to-eat foods that may have been handled by employees were discarded, all food contact surfaces were disinfected, and all employees who reported gastrointestinal symptoms were excluded from work until 72 hours after they recovered from their illness. Proper handwashing procedures were reviewed with restaurant managers. The restaurant managers were instructed to review proper handwashing procedures with their employees, to monitor employee handwashing, and to require the use of disposable gloves when touching ready-to-eat foods as a precautionary measure.

This was an outbreak of calicivirus gastroenteritis associated with a restaurant. No single vehicle was identified. Reports of foodhandlers with gastrointestinal illness over a 20-day period, and the identical viral sequence from the stool of the patron and from the child of the restaurant employees, indicate that ill foodhandlers were the source of contamination.

(6)
Calicivirus Gastroenteritis Associated with a Restaurant

February Dakota County

On Thursday, February 8, 2001 the Minnesota Department of Health (MDH) received a foodborne illness complaint from three coworkers who became ill after sharing a common meal at a restaurant in Burnsville on Monday, February 5. On Monday, February 12 another foodborne illness complaint was received; this involved an unrelated group of 10 coworkers who ate lunch from the same restaurant on Thursday, February 8. Items consumed by both groups included sandwiches, salads, and soups.

Epidemiologists from MDH interviewed members of both groups by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. Two MDH sanitarians visited the restaurant on February 12 to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures. All foodhandlers that had worked at the establishment within the last 3 weeks were interviewed to determine illness history of themselves and family members. One stool sample was collected from one of the complainants and submitted to MDH for bacterial and viral testing.

All three people from the group that ate on February 5 and nine of 10 people from the group that ate on February 8 were interviewed. Eight of 12 (67%) met the case definition and four (33%) reported no

illness. Seven cases (88%) had vomiting, seven (88%) had diarrhea, six (75%) had cramps, five (63%) reported fever, and no one reported bloody stools. No one was hospitalized. The median incubation period was 35 hours (range, 33 to 56 hours). The median duration of illness was 34 hours (range, 31 to 61 hours). No food items were statistically associated with illness. The stool sample collected from one of the complainants was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool tested positive for calicivirus.

When interviewed by sanitarians, none of the eight employees nor the manager of the restaurant reported any recent gastrointestinal illness. However, one reported a household member had vomited sometime during the week of February 5, and another reported a household member with vomiting on February 11. One of the staff indicated that there had been gastrointestinal illness at her child's school, and her child had been ill on February 10, but she did not think the child had vomited. The school was contacted and denied any recent unusual increase in student absences due to gastrointestinal illness.

No critical foodhandling violations were noted at the restaurant. A recommendation was made to move the paper towel dispenser closer to the designated handwashing sink in order to assist in proper handwashing procedures, and management was asked to review handwashing procedures with all staff. A fact sheet on excluding ill employees and reporting illnesses was left with the management.

This was an outbreak of calicivirus gastroenteritis associated with a restaurant. No specific food vehicle or source of contamination was confirmed. However, contamination of food by foodhandlers who reported ill family members was a plausible mechanism of transmission.

(7)
Viral Gastroenteritis Associated with Submarine Sandwiches from a Restaurant

February Hennepin County

On February 16, 2001 the Minnesota Department of Health (MDH) received a complaint from a person who reported gastrointestinal illness after eating a submarine sandwich from a Minneapolis restaurant on February 14. The City of Minneapolis Division of Environmental Health (MEH) received two additional independent complaints on February 23 from parties who reported gastrointestinal illness after eating submarine sandwiches from the same establishment on February 16. A Hennepin County Community Health Department epidemiologist was notified. An investigation was initiated on February 23. Epidemiologists from MDH and MEH environmental health specialists interviewed complainants by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating sandwiches from the restaurant. MEH sanitarians inspected the restaurant on February 20 in response to the initial complaint, and again on February 23. MEH sanitarians interviewed three restaurant employees about recent gastrointestinal illness and job duties, and reviewed food preparation procedures. No stools were collected from patrons or restaurant employees for testing.

Six of seven persons in the three parties were interviewed (one of one in the first complaint, two of three in the second, and three of three in the third complaint). Four persons (67%) met the case definition. All four reported diarrhea and vomiting, two (50%) reported nausea, and two (50%) reported cramps. Meal dates were February 14 and 16. The median incubation period was 34 hours (range, 14 to 38 hours). The median duration of illness was 70 hours (range, 38 to 72 hours). The cases ate a variety of sandwiches, including ham and turkey club, roasted chicken and vegetables, and roast beef and turkey with vegetables.

Four restaurant employees were interviewed, including two of the three employees who worked on February 16. None of the employees reported recent gastrointestinal illness. According to MEH no employee rosters were available; therefore, no other employees were interviewed about gastrointestinal illness or work duties. The food preparation review revealed that tomatoes, green peppers, and onions were sliced at the restaurant, but all the meats and cheeses used in the sandwiches were pre-sliced. The lettuce was pre-shredded. The inspection of the establishment conducted on February 20 revealed one critical violation; the cooler temperature was 48° F.

The clinical and epidemiologic characteristics of these illnesses were consistent with viral gastroenteritis caused by Norwalk-like caliciviruses. Submarine sandwiches from a restaurant were the likely vehicle. No single sandwich type or ingredient in the sandwiches was conclusively identified as the vehicle. No ill foodhandlers were identified with onset of gastrointestinal symptoms on or before the meal dates of the cases.

(8)
Calicivirus Gastroenteritis Associated with a Restaurant

February Ramsey County

On February 20, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline was called by an individual reporting gastrointestinal illness in multiple members of a group after eating lunch at a restaurant in Roseville on February 14. A St. Paul-Ramsey County Department of Public Health epidemiologist was contacted by MDH, and an investigation was initiated. Lists of foods served at the restaurant, patron group members, and food workers were obtained. Persons were interviewed by MDH epidemiologists about foods consumed at lunch and illness history. A Ramsey County sanitarian visited the restaurant on Tuesday, February 20 to identify ill workers, speak with management and assess food-handling practices in the restaurant. Food workers were interviewed by MDH. A case was defined as any person who had eaten at the restaurant and who subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). Three stool samples from cases were collected and submitted to MDH for bacterial and viral testing.

Eight (100%) persons were interviewed. Six cases (75%) met the case definition. One case reported mild gastrointestinal symptoms, but did not meet the case definition and was not included in the analysis. Six cases (100%) reported vomiting, five (83%) reported diarrhea, and three (50%) reported cramps. Dates of onset were from February 16 through February 18. The median incubation was 45 hours (range, 43 to 49 hours). The median duration of illness was 10 hours (range, 5 to 44 hours). Cases reported eating a variety of foods, including chicken club sandwiches, chicken caesar sandwiches and buffalo wings. Two employees, a bartender and a server, reported gastrointestinal illness within the 7 days preceding the event. All three patron stool samples tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Two of the patron stool samples tested positive for calicivirus.

This was an outbreak of calicivirus infections associated with a restaurant. Two ill food workers were identified. Contamination of food items likely occurred from one or more infected food workers.

(9)
Calicivirus Gastroenteritis Associated with a Skilled Nursing Facility/Hospital

February Otter Tail County

On March 5, 2001 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness at a facility in Fergus Falls. The facility was comprised of a skilled nursing facility and an adjoining hospital. According to the facility's infection control practitioner, gastrointestinal illness was reported among residents and staff at the skilled nursing facility, and patients and staff at the hospital, beginning on February 27. Nursing students training at the facility were also reportedly ill.

The facility provided a list of ill nursing home residents and patients that included specific symptoms and the date of onset of their symptoms. MDH epidemiologists contacted and interviewed direct patient care staff and non-food service, non-patient care staff (these two groups will be designated as "staff" for this report) that called in sick on or after February 27. A sample of staff that did not call in sick was also interviewed as a comparison group. Nursing students were called, but none were reached despite leaving messages. The information collected during the interviews included illness history, work duties, work schedule, foods eaten at the cafeteria, and illness in family members since February 24. MDH epidemiologists interviewed food service employees about illness history, work duties, work schedule, foods eaten at the cafeteria and illness in family members since February 20.

A case was defined as a staff or a food service employee with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) on or after February 20, or a patient with any vomiting or diarrhea in the same time period as reported by the infection control practitioner. Stool samples were collected on cases that were ill or recently ill. All were tested at MDH for calicivirus, and three were also tested for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*.

A sanitarian from MDH and staff from MDH Division of Facility and Provider Compliance inspected the dietary department of the facility on March 6.

Interviews were conducted or information was received on 107 staff, patients, and food service employees. Three persons, one patient and two staff, were excluded from the analysis because they reported mild gastrointestinal illness that did not meet the case definition. Of the remaining 104 persons, 80 (77%) met the case definition. Sixty-nine of 80 (86%) persons reported having diarrhea; 61 of 79 (77%) reported vomiting; 32 of 61 (51%) reported cramps; 30 of 78 (38%) reported fever, and two of 56 (4%) reported bloody stools. Duration of illness ranged from 10 to 247 hours (median, 49 hrs). The 17 patients who met the case definition had onset of illness ranging from February 25 to March 30; 12 patients had onsets on February 27 and 28.

Fifty-one of the 61 staff (84%) included in the analysis met the case definition. Onsets of illness ranged from February 22 to March 7. Twelve cases did not eat any cafeteria foods; however, all 12 performed direct patient care duties, including five cases that reported taking care of patients with gastrointestinal symptoms. Seven cases reported having family members with gastrointestinal illness in the week prior to their onset.

Twelve of 26 (46%) food service employees interviewed reported gastrointestinal illness that met the case definition. Onsets of illness ranged from February 20 to March 9. Nine food service employees could not

be reached despite multiple attempts. Interviews revealed that at least five food service employees worked while ill, including the person with the earliest onset; this employee had direct hand contact with food.

Stool samples were collected from nine persons, including patients, staff, one food service employee, and one nursing student. All three stool specimens tested for bacterial pathogens were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Four of the nine (44%) specimens tested for calicivirus were positive. The positive specimens were collected from two staff members and a patient.

Statistical analysis did not associate risk of disease with specific food items, even when excluding from the analysis cases who were clearly or probably infected through person-to-person transmission (such as nursing staff who took care of patients with gastrointestinal symptoms).

The inspection of the dietary department found that the facilities were generally in orderly and sanitary condition; however, three critical and four non-critical violations were identified. Food service employees were seen wearing gloves and hairnets during the inspection. Food service employees were observed washing their hands. An order was issued to discontinue use of food preparation sinks, service sinks and other non-handwashing sinks to wash hands. Other orders issued addressed the improper storage of eggs above margarine, the need for air break on ice machines, preventing backflow on the faucet, storing soiled clothes in approved sanitizing solution rather than allowing them to sit on the counter, and the need for cooling of BBQ sauce in shallower pans. All ready-to-eat foods were discarded during the inspection.

Additional interventions to stop disease transmission included the exclusion of food service workers that reported gastrointestinal illness until 72 hours after recovery, and exclusion of direct-patient care staff until 24 hours after recovery.

This was an outbreak of calicivirus gastroenteritis at a health care facility. Cases included patients, staff, and food service workers. Foodborne and person-to-person transmission both played a role. Ill food service employees, including a person who was ill at work before the reported onset of the outbreak, likely contaminated foods served to patients and staff. Additionally, there was evidence of gastrointestinal illness in the community; some employees were likely secondary cases after their own family members were ill with gastrointestinal symptoms. The specific vehicles and the time period of foodborne transmission could not be determined.

(10)
Calicivirus Gastroenteritis Associated with a Banquet

February Ramsey County

On Monday, February 26, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline was called by a couple that had attended a banquet held at a restaurant in Maplewood on Saturday, February 24. The banquet was attended by approximately 60 people. Foods served at the banquet included a choice of entree (steak, chicken, or walleye), salad, baked potato, rolls, and green beans. The organizer of the banquet was contacted and also reported gastrointestinal illness. The City of Maplewood sanitarian and a St. Paul-Ramsey County Department of Public Health epidemiologist were contacted by MDH, and an investigation was initiated.

Banquet organizers provided a list of names and phone numbers for attendees. Epidemiologists from MDH interviewed attendees by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea (≥3 loose stools in a 24-hour period) after attending the banquet. The City of Maplewood sanitarian visited the restaurant on February 27 to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures. Four stool samples were collected from ill banquet attendees and submitted to MDH for bacterial and viral testing.

Fifty-two attendees were interviewed. Twenty-three (44%) met the case definition, 27 (52%) reported no illness, and two (4%) had mild gastrointestinal symptoms that did not meet the case definition and were excluded from further analysis. Nineteen cases (83%) had diarrhea, 15 (65%) had cramps, 14 (61%) had vomiting, nine (39%) had fever, and no one reported bloody stools. No one was hospitalized. The median incubation period was 35 hours (range, 9 to 59 hours). The median duration of illness was 33 hours (range, 14 to 40 hours); however, the majority of cases were still ill when interviewed. Three non-ill attendees subsequently became ill; these appeared to be secondary cases (i.e., household members of primary cases). The stool samples collected from four ill banquet attendees were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Two of the four stool samples tested positive for calicivirus.

No food items were statistically associated with illness; of note, all persons interviewed ate salad. Two food workers at the restaurant were involved in preparing food for the banquet. The first food worker prepared baked potatoes and did not report any recent gastrointestinal illness or any recently ill household members. A stool sample submitted by this food worker was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus. The second food worker prepared all other items served at the banquet, including the entrees and the salad. This food worker had recently been ill with gastrointestinal symptoms, and had children at home who also had been recently ill with vomiting and diarrhea. Stool samples were collected from this food worker and three household members. Stools from all four of these individuals were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*, but stools from two of the food worker's household members tested positive for calicivirus. Genetic sequencing of the calicivirus isolated from a food worker's household member and from two banquet attendees was conducted at MDH. The genetic sequence of the calicivirus isolated from a food worker's household member was identical to the sequence of calicivirus isolated from two banquet attendees.

The sanitarian made recommendations to the restaurant concerning the importance of proper handwashing and glove use, and emphasized the additional importance of these measures for workers with ill young children at home.

This was an outbreak of calicivirus gastroenteritis associated with a banquet. No specific food vehicle was identified. The likely source of contamination was a recently ill food worker who prepared most of the food items served.

(11)
Viral Gastroenteritis Associated with a Workplace Cafeteria

March Hennepin County

On March 7, 2001 the sanitarian from the City of Golden Valley (GV) notified Hennepin County Community Health Department Epidemiology (HCCHD) of a complaint of gastrointestinal illness in

people who worked at a company in Golden Valley. An investigation was initiated on that date. Lists of company employees who had attended meetings or events and menus for each event from March 1 and March 2 were obtained by HCCHD.

HCCHD epidemiologists interviewed persons by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea (≥3 loose stools in a 24-hour period) after a meeting. Two stool specimens were obtained for bacterial and viral testing. The GV sanitarian interviewed the food service management about food service employee illness dating back to February 24.

Sixty persons from five meetings or events were interviewed. Of the 60, two were excluded from analysis because they had ill children at home and they had not eaten at the company during the time in question. Forty-two of the remaining 58 (76%) met the case definition. Symptoms included vomiting (93%), diarrhea (88%), nausea (86%), fatigue (83%), chills (81%), headache (57%), cramps (52%), muscle aches (50%), fever (36%) and backache (29%). One person (2%) reported bloody stools. Duration of symptoms ranged from 12 hours to 6 days. Dates of illness onset were March 1 though March 4; most cases (86%) had onset on March 2 or 3. Incubation periods were calculated for those ill persons (30) who had attended a specific event. The median incubation period was 33 hours (range, 8.5 to 48 hours).

The two stool specimens obtained were negative for *Salmonella*, *Shigella*, *Campylobacter* and *E.coli* O157. One of the two stools was positive for calicivirus.

Statistical analysis for one group found that illness was associated with eating pineapple (8 of 8 cases vs. 1 of 5 controls; odds ratio [OR], undefined; 95% confidence interval [CI], undefined; p=0.003), or cantaloupe (7 of 8 vs. 1 of 6; OR, 35; 95% CI, 1.2 to 1,880; p=0.03). Statistical analysis of all the groups combined found an association with eating fruit (31 of 42 vs. 6 of 15; OR, 4.2; 95% CI, 1.03 to 18; p=0.02). Fruit was not served at one of the five events investigated, so it is likely that other foods acted as vehicles.

Food service management reported that none of the food service workers had reported any vomiting and/or diarrhea during this time period.

This was an outbreak of calicivirus gastroenteritis associated with eating fruit and possibly other foods at meetings or events held at a company in Golden Valley. The source of contamination was not identified; however, individual food workers were not interviewed.

(12)
Calicivirus Gastroenteritis Associated with a Restaurant

March Hennepin County

On Monday, March 5, 2001 the Minnesota Department of Health (MDH) received notification from Minneapolis Division of Environmental Health (MEH) about a complaint they were investigating from a group of people who became ill after an office party held at a restaurant in Minneapolis on Wednesday, February 28. Cold food was served at a buffet in a private room at the restaurant.

Sanitarians from MEH interviewed attendees by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea (≥3 loose stools in a 24-hour

period) after eating at the restaurant. Sanitarians visited the restaurant to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures. All foodhandlers that had worked at the establishment within the last week were interviewed to determine illness history of themselves and family members. Nine stool samples were collected from complainants and submitted to MDH for viral testing. MEH conducted bacterial testing on the stools.

Twenty-two people from the office party were interviewed. Fourteen (64%) met the case definition and eight (36%) reported no illness. Fourteen cases (100%) had diarrhea, 14 (100%) had nausea, thirteen (93%) vomited, four (29%) reported fever, and no one reported bloody stools. No one was hospitalized. The median incubation period was 32 hours (range, 5 to 62 hours). The median duration of illness was 44 hours (range, 31 to 64 hours). No food items were statistically associated with illness, however the cold prime rib sandwich had an odds ratio of 26 (95% confidence interval, 0.70, 5215). Six of nine stool samples collected from the complainants tested positive for calicivirus.

When interviewed by sanitarians, one of the employees that prepared the cold prime rib sandwich for the party reported having gastrointestinal illness from February 26 to 28.

This was an outbreak of calicivirus gastroenteritis associated with a restaurant. Contamination of food by foodhandlers who reported illness was a plausible mechanism of transmission.

(13)
Calicivirus Gastroenteritis Associated with Raw Oysters Served at a Restaurant

March Hennepin County

On March 16, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a complaint concerning a group of three people who dined at a restaurant in Minneapolis on March 13.

After being notified of the complaint by MDH, a sanitarian from the Minneapolis Division of Environmental Health (MEH) visited the restaurant and found that the restaurant had received four other illness complaints in the month of March. These complaints had not been reported to MEH as required by the Minnesota Food Code. MEH interviewed food workers and did a food preparation review. No ill employees were identified.

Names and contact information for the persons that had complained to the restaurant were obtained by Hennepin County Community Health Department (HCCHD). The additional patrons who were part of groups that had called in complaints to the restaurant were interviewed by HCCHD epidemiologists about their food consumption and symptoms using a standard interview form.

A stool specimen was collected from a patron who had dined at the restaurant on March 13. The specimen was submitted to MDH for bacterial and viral testing.

There were a total of 21 patrons in the five groups; 14 were reported ill; 11 of 21 were interviewed. The groups ate on March 3, March 8, March 11, March 13, and March 16. The 11 patrons interviewed came from five different groups. Of the 11 patrons interviewed, 10 were ill. All 10 ill (100%) reported diarrhea, and eight (80%) had vomiting. The mean incubation period was 36 hours (range, 24 to 48 hours). The duration of illness was 12-72 hours. A variety of foods were shared by all groups, but only those who ate oysters became ill. All of the 14 people reported ill ate oysters vs. none of the seven patrons that were not ill (odds ratio, undefined; $p< 0.001$).

The stool specimen collected from a patron and tested at MDH was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The specimen was positive for calicivirus by RT-PCR. The PCR product was forwarded by MDH to the Centers for Disease Control and Prevention (CDC) Viral Gastroenteritis Branch for sequencing and comparison to caliciviruses detected from recent oyster-associated outbreaks in other states. According to the CDC, the calicivirus Region B gene sequence from a restaurant patron was identical to sequences from two cases in a Maryland outbreak.

The Minneapolis and Milwaukee district offices of the U.S. Food and Drug Administration were involved in this investigation, as was the Minnesota Department of Agriculture. The restaurant had not saved shellfish tags. The restaurant received bluepoint oysters from a Minnesota supplier, and the supplier received oysters from an Alabama fishery. In the relevant time period, the supplier received 30 cases of bluepoint oysters from the fishery on February 2 and 25 cases on March 5.

MDH attempted to conduct a "trace-forward" investigation by contacting approximately ten other Minnesota restaurants that received oysters from the supplier, using invoices provided by the supplier. No other illnesses were identified at these other restaurants. Another restaurant in the area that received oysters from the supplier in the same time period as the restaurant had shellfish tags naming two different bays with harvest dates in late February and early March.

This was an outbreak of calicivirus gastroenteritis associated with raw oysters consumed at a restaurant. This conclusion was based on the temporal clustering of multiple independent complaints and the statistically significant association between raw oyster consumption and illness. In April 2001, the City of Minneapolis assessed a $1000 administrative penalty on restaurant management after a hearing concluded that the restaurant had failed to maintain shellstock tags and had failed to report customer illnesses, resulting in a delay in investigation and resulting in additional illnesses.

(14)
***Campylobacter jejuni* Infections Associated with Raw Milk Served at a Farm**

March Otter Tail County

In March 2001, routine interviews of *Campylobacter jejuni* cases identified through active laboratory surveillance at the Minnesota Department of Health revealed multiple cases among a group of individuals employed by a religious ministry group. Stool specimens from the cases were collected on March 13 or March 14. Members of the ministry group with reported illness were interviewed in detail about symptoms, food consumption history, and other activities with a standardized questionnaire. Ultimately, four cases of culture-confirmed *Campylobacter jejuni* infection were identified among a group of four ministry employees. Two cases resided in Dakota County, and the remaining two cases resided out-of-state. The cases were females ranging in age from 19 to 23 years old. Onsets of diarrhea occurred on March 11 and March 12. None of the cases were hospitalized. The cases comprised a group that traveled to northwestern Minnesota on March 8. They stayed with a host family on a farm near Butler while they worked in the region. All four cases consumed unpasteurized milk as a beverage and in homemade salad dressing at the farm during an evening meal on March 8. Two of the four cases also consumed unpasteurized milk the next morning, March 9.

This was an outbreak of *Campylobacter jejuni* infections. Although not statistically implicated, raw milk was the likely vehicle. Raw milk is a well-established vehicle of campylobacteriosis. The incubation period of 3 to 4 days following raw milk consumption in this outbreak is consistent with the

typical incubation for *Campylobacter jejuni* gastroenteritis. The Minnesota Department of Agriculture was informed about the outbreak so that educational material on the hazards of drinking raw milk could be sent to the farmer.

(15)
Viral Gastroenteritis Associated with Chicken Salad Sandwiches Served at a Catered Lunch

March Hennepin County

On March 28, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a report of gastrointestinal illness in multiple employees of a company that had a workplace lunch catered by a Minneapolis restaurant on March 22. A Hennepin County Community Health Department (HCCHD) epidemiologist was contacted by MDH, and an investigation was initiated.

Lists of foods catered by the restaurant and the luncheon attendees were obtained from the company supervisor who ordered the food for the lunch. Persons were interview by MDH epidemiologists about foods consumed and illness history. A sanitarian from the Minneapolis Division of Environmental Health visited the restaurant on April 2 to interview ill workers, speak with management, and assess foodhandling practices at the eatery. A case was defined as any person who had eaten the catered lunch on March 22 and who subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). No stool samples were collected because ill persons had been recovered for several days by the time they were interviewed.

All 22 lunch attendees were interviewed. Two cases reported mild gastrointestinal symptoms that did not meet the case definition and were excluded from the analysis. Of the remaining 20 attendees, six (30%) met the case definition. Three cases (50%) reported vomiting, four (67%) reported diarrhea, five (83%) reported cramps, and two (40%) reported fever. Dates of illness onset were March 23 (n=3) and March 24 (n=3). The median incubation was 36 hours (range, 33 to 43 hours). The median duration of illness was 25 hours (range, 6 to 84 hours).

Lunch attendees ate boxed lunches of chicken salad, chicken pesto, roast beef, salami, or vegetarian sandwiches along with chips, and cookies. Eating the chicken salad sandwich was associated with illness (4 of 6 exposed ill vs. 2 of 14 non-exposed ill; risk ratio, 4.7; 95% confidence interval, 1.2 to 19.0; p= 0.03). No other food items were associated with illness. An environmental investigation did not identify any ill food workers or improper foodhandling practices. There were no illnesses reported among family members of food workers.

The clinical and epidemiologic characteristics of this outbreak were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. Chicken salad sandwiches were the likely vehicle. Contamination of the sandwiches by an ill food worker was a plausible source of the outbreak, but no ill food workers were identified.

(16)
Calicivirus Gastroenteritis Associated with Ham Sandwiches Served at a Birthday Party

March Meeker County

On March 26, 2001 the Minnesota Department of Health (MDH) was notified of gastrointestinal illness occurring among people who attended a community pancake breakfast in Litchfield. After further

investigation, the illnesses were found to be associated with attending a birthday party in a private home in Stewart on March 24. Twenty-four people attended the party.

Complete lists of guests and foods served at the party were obtained. Epidemiologists from MDH contacted guests to gather information about their illness history and foods they had eaten at the party. A case was defined as any person who had attended the party and subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). Five people were excluded from the analysis because they reported gastrointestinal symptoms during the week prior to the birthday party. A stool sample was collected from one individual.

The Minnesota Department of Agriculture (MDA) was contacted to inspect the grocery store deli from which the ham and turkey sandwiches were purchased for the event. The MDA conducted an inspection addressing handwashing, employee illness and temperature violations. The inspection did not identify any serious problems with the facility, and the employee illness log was kept up-to-date. The deli prepared two orders of ham and turkey sandwiches: one for the birthday party and one for another event. MDH interviewed the contact person for the other event. In addition, MDA addressed employee illness during its follow-up with the store's bakery facility, which made the sandwich buns.

All 24 individuals who attended the birthday party were interviewed, and 11 (46%) met the case definition. Of the 11 cases, nine (82%) reported diarrhea, eight (73%) reported cramps, seven (64%) reported vomiting, and four (36%) reported fever. Dates of illness onset were March 24 through March 26. Incubation periods ranged from 10 to 51 hours, with a median of 39 hours, and duration of illness ranged from 1 to 40 hours, with a median of 36 hours. Eating a ham sandwich was significantly associated with illness (8/9 exposed vs. 3/10 not exposed; relative risk, 18.7; 95% confidence interval, 1.2 to 654.2; p=0.01). The stool sample tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool sample was positive for calicivirus.

According to the employee illness log at the grocery deli and bakery, none of the employees who worked during the week prior to the event were ill. In addition, the contact person from the second event reported that there were no illnesses among her guests.

An outbreak of calicivirus infections occurred among guests at a birthday party in Stewart. Eating ham sandwiches at the party was significantly associated with illness. None of the individuals who attended the other event with deli-prepared sandwiches reported illness. None of the employees at the deli or bakery reported illness in the week prior to the party. However, five people who attended the party reported being ill in the week prior to the event. The ham sandwiches may have been inadvertently contaminated by party guests who were previously ill.

(17)
Calicivirus Gastroenteritis Associated with a Restaurant

April Hennepin County

On April 23, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of gastrointestinal illness among three of four individuals who ate together at a restaurant in Maple Grove on April 20. The two couples denied any other common exposures.

An epidemiologist from Hennepin County Community Health Department (HCCHD) was contacted immediately. The restaurant manager was called and reported that the restaurant had not received any

other complaints. In addition, the manager reported that none of the employees had been ill according to the employee illness log. On April 24, two additional complainants were identified: one through the foodborne illness hotline and one directly from the restaurant. Sanitarians from HCCHD interviewed restaurant employees about food consumption, job duties, 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. One stool sample was collected from an ill patron and sent to MDH for bacterial and viral testing. No stool samples were collected from employees. A HCCHD sanitarian visited the manager of the restaurant to discuss the importance of educating servers on preventing the spread of gastrointestinal infections.

Five of the eight (63%) individuals who were identified through complaints were ill. Five (100%) cases reported diarrhea, five (100%) reported vomiting, five (100%) reported cramps, and four (80%) reported vomiting. Onsets of illness occurred on April 22 and 23. The median incubation period was 38 hours (range, 8 to 46 hours). The duration of illness was 59 hours for the one patron who had recovered at the time of the interview.

Twenty-one (29%) of 72 employees were interviewed, and three (10%) met the case definition. Two (67%) cases reported vomiting, two (67%) reported diarrhea, two (67%) reported cramps, two (67%) reported fever, and one (33%) reported bloody stools. Onsets of illness began on April 8. The median incubation period could not be calculated since there was no known, identifiable exposure among the employees. The duration of illness was 24 hours for the one employee who had a definite onset date and recovery date at the time of the interview.

The patron's stool sample tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool sample was positive for calicivirus.

This was an outbreak of calicivirus among persons who ate at a restaurant. Three foodhandlers were ill with vomiting or diarrhea during the 2 weeks prior to the patrons' meal dates. Presumably, the ill patrons consumed food that had been contaminated by one or more ill employees at the restaurant.

(18)
Scombroid Poisoning Associated with Tuna Salad Served at a Restaurant

May Hennepin County

On May 9, 2001 the Minnesota Department of Health (MDH) received a complaint from an individual who had dined with a business associate the week before at a restaurant in Bloomington. The symptoms experienced by the two complainants were characterized as sensitivity or allergic reactions. The complainants ate together at the restaurant on May 1 and May 2. Both complainants ate tuna salad from fresh tuna loin, although one ate the tuna salad on May 1 and the other on May 2. Other food items consumed include halibut, salmon, and bread. MDH notified the City of Bloomington Environmental Health (CBEH) and an investigation was initiated.

MDH and CBEH staff interviewed complainants about illness symptoms and food history. A case was defined as a person who had eaten fish with subsequent onset of symptoms consistent with scombroid fish poisoning (i.e., facial flushing, sweating, development of rash, palpitations, headache, nausea, dizziness, vomiting, or diarrhea). Restaurant management and CBEH staff were unable to identify others who ate at the restaurant during this period. No other complaints of illness were received by the restaurant or by MDH. CBEH staff inspected the restaurant, focusing on flow-of-food for the associated

food items. No unused portion of the implicated fresh tuna loin remained at the time of inspection; therefore, no samples of tuna were submitted for histamine and organoleptic analysis.

Both persons met the case definition of scombroid fish poisoning. One person reported diarrhea, cramps, facial flushing, and a headache. The other person reported diarrhea, cramps, facial flushing, severe headache, and heart palpitations. Neither case sought medical attention. Incubation periods were 1 hour and 2 hours, respectively. The duration of symptoms for each case was 7 hours and 9 hours, respectively.

Critical food safety violations detected during the environmental health inspection at the restaurant included certain reach-in cooler drawers at the cook line not at the proper temperature of 41°F or below. CBEH issued the following orders to the restaurant: record temperatures of tuna loin upon receipt, reject tuna loin above 40°F, hold tuna loin on ice in the cooler, and rapidly cool the tuna salad in an approve manner after blanching and/or mixing with other ingredients.

The clinical and epidemiologic features of this outbreak were consistent with scombroid poisoning caused by tuna salad served at a restaurant. Testing of the tuna product served was not conducted, but improper holding temperatures at the restaurant may have contributed to scombrotoxin production.

(19)
Calicivirus Gastroenteritis Associated with a Banquet at a Hotel

May Hennepin County

On May 7, 2001 the City of Bloomington Environmental Health (CBEH) received a foodborne illness complaint associated with a banquet meal eaten at a hotel on May 3. Cases of illness associated with two other banquet functions held on May 3 and 4th were subsequently identified from contact information provided by hotel staff. On May 15, CBEH received a foodborne illness complaint associated with a conference meal eaten at the hotel on May 8. On June 4, an additional complaint was received from a person that attended a conference at the hotel from April 29 through May 1.

Lists of food items served at conferences from May 3 through May 8, and contact information for conference attendees and food employees were obtained from hotel staff and banquet/conference coordinators. CBEH staff interviewed attendees by phone about food consumption and illness history. A case was defined as a person who ate at the hotel and subsequently developed illness involving vomiting and/or diarrhea ($\geq$3 loose stools in a 24-hour period), plus one other symptom. On May 8, CBEH staff inspected the hotel's banquet operations, focusing on critical foodhandling practices. CBEH staff interviewed food employees about job duties, illness history, and food consumption. Six stool specimens from two attendees and four employees were delivered to the Minnesota Department of Health for bacterial and viral pathogen testing.

Four conferences were held at the hotel from May 3 through May 8. A conference group (Group 1) of 16 was served a cheese and fruit platter at approximately 3:00 p.m. on May 3. A banquet group (Group 2) of 250 was served a plated dinner of tossed salad, Mediterranean chicken or London broil, mashed potatoes, vegetables, and assorted rolls at approximately 7:15 p.m. on May 3. A conference group (Group 3) of 60 was served a lunch buffet on May 4, a breakfast buffet on May 5, and platters of fruit, muffins, beverages, and other items during conference breaks on both days. Specific food items for the May 4 lunch buffet included soup, green salad, fruit salad, potato salad, chilled wrap sandwiches, dessert, and beverages. A conference group (Group 4) of 166 was held from May 7 to May 11, and was

served food items similar to those served at the other conferences. Other than the independent complaint received by CBEH on June 4, no information was available for the conference held between April 29 and May 3 (Group 5). The complainant reported eating a variety of foods at the conference, including an omelet, toast, fruit, tossed salad, tuna salad, chicken salad, a burrito, vegetables, chips, linguine, soda and tea.

CBEH staff interviewed 157 of 493 conference attendees; of these, 64 (41%) met the case definition: seven of 10 (70%) for Group 1, 44 of 82 (54%) for Group 2, 10 of 29 (35%) for Group 3, two of 35 (6%) for Group 4, and one of one for Group 5.

The median incubation was 41 hours (range, 13 to 84 hours). The median illness duration was 22 hours (range, 0.5 to 59 hours). Fifty-nine of 64 (92%) cases reported diarrhea; 46 of 62 (75%) reported abdominal pain; 47 of 64 (73%) cases reported nausea; 41 of 43 (64%) reported vomiting; and 29 of 62 (47%) reported fever. No deaths or hospitalizations were reported; two persons visited their health care providers. Both stool specimens submitted from ill attendees tested negative for bacterial pathogens; one specimen tested positive for calicivirus**.**

Statistical analyses were conducted separately for each group. Foods associated with an elevated risk of illness included: strawberries (7 of 7 cases vs. 0 of 2 controls; odds ratio (OR), undefined; $p = 0.03$) served to Group 1 Thursday afternoon; tossed salad (44 of 44 cases vs. 34 of 38 controls; OR, undefined; $p = 0.04$) and vegetables (42 of 42 cases vs. 33 of 38 controls; OR undefined, $p = 0.02$) served to Group 2 Thursday evening; and chilled Santa Fe fajita wraps (10 of 10 cases vs. 8 of 18 controls; OR, undefined, $p = 0.003$) served to Group 3 at noon on Friday. Coffee served to Group 3 Saturday morning, May 5th, was also associated with illness (9 of 9 cases vs. 9 of 19 controls; OR, undefined; $p = 0.02$).

During the inspection on May 8, CBEH staff noted the misuse of disposable gloves and observed a banquet food employee consume food while preparing it for service. This employee was one of two banquet food employees and one server who either prepared or served the implicated food items. No employees reported illness. All four stool specimens submitted for testing were negative for bacterial and viral pathogens. No other critical foodhandling violations were identified.

This was an outbreak of calicivirus gastroenteritis associated with a hotel banquet kitchen. Several foods, primarily ready-to-eat foods, were implicated, suggesting that foods were likely contaminated by infected food employees. However, employee interviews did not identify a specific source of illness.

(20)
Salmonella Enteritidis Infections Associated with Eggs Benedict Served at a Food Stylist Convention

May Hennepin County

On Monday, May 7, 2001 the Minnesota Department of Health (MDH) was notified by the Minneapolis Division of Environmental Health (MEH) of reports of gastrointestinal illness among attendees of a food stylist convention held during April 29-May 2 at a hotel in Minneapolis. A total of 280 individuals from 28 states and eight countries attended the convention.

The MEH obtained a list of attendees and a menu of foods served at the convention from the convention coordinator. A questionnaire was developed using this menu. Minnesota residents were interviewed by

MDH and Hennepin County Community Health Department (HCCHD) epidemiologists about illness history and foods consumed during the convention. Other state health departments were supplied with contact information and questionnaires to interview their residents who attended the convention. A sanitarian from MEH visited the hotel on May 7 to interview food workers, speak with management, and assess food-handling practices.

A case was defined as person who attended the convention and subsequently became ill with diarrhea (≥3 loose stools in a 24-hour period). Sixteen stool samples were submitted to MDH from convention attendees (n=9) and hotel employees (n=7) who ate in the hotel cafeteria.

Epidemiologists at the MDH and HCCHD or other state and local health departments interviewed 130 of 280 attendees. They included residents of Minnesota (58), Wisconsin (30), Illinois (18), Missouri (10), Ohio (6), Michigan (2), Washington (2), Oregon (1), South Dakota (1), Kansas (1), and Iowa (1). Forty-six cases (34%) were identified. All 46 cases (100%) had diarrhea, 39 (85%) had cramps, 30 (65%) reported fever, 11 (24%) had bloody stools, and five (11%) had vomiting. The median incubation was 49 hours (range, 4 to 144 hours). The median duration of illness was 62 hours (range, 13 to 120 hours). Eating breakfast on Tuesday (43 of 46 cases vs. 40 of 73 controls; odds ratio [OR], 12.0; 95% confidence interval [CI], 3.0- 53.0; $p<0.001$), eating eggs Benedict at Tuesday breakfast (41 of 46 cases vs. 36 of 73 controls; OR, 8.4; 95% CI, 2.7 to 28.0; $p<0.001$), and drinking juice at Tuesday breakfast (38 of 46 cases vs. 29 of 73 controls; OR, 7.2; 95% CI, 2.7 to 20.0; $p<0.001$) were significantly associated with illness in the univariate analysis.

Leftover eggs Benedict were made available to hotel employees on Tuesday, May 1 at the hotel cafeteria. Eight of eleven hotel employees interviewed who ate eggs Benedict at the hotel cafeteria became ill with similar onset and symptoms as convention attendees. The only food common to the hotel employees and convention attendees was the eggs Benedict. None of the 11 hotel employees drank juice with their meals.

Salmonella Enteritidis with an indistinguishable PFGE subtype pattern designated (SE82) was isolated from 15 cases. This pattern had not been seen previously in Minnesota. This pattern was sent to PulseNet; the pattern matched isolates from a Maine restaurant outbreak in early April. The implicated food in that outbreak was also hollandaise sauce prepared with unpasteurized eggs.

The MEH conducted the environmental investigation and interviewed employees at the hotel. The eggs Benedict consisted of poached eggs, Canadian bacon, and hollandaise sauce served on English muffins. The eggs used to prepare the poached eggs and hollandaise sauce were unpasteurized. The hollandaise sauce was made from 140 pooled egg yolks blended with hot butter, emulsified, and poured into bain marie pots. The sauce was then held at room temperature for 30 minutes before being poured over the eggs Benedict, which were then placed in a hot box. It was then served to convention attendees. The juice for the Tuesday breakfast was from a concentrate that was reconstituted with water.

There was no evidence that cross-contamination in the food preparation area was likely to have occurred. Hot and cold food items were prepared in separate areas by specifically assigned food workers, i.e., food workers were not cross-utilized between hot and cold food prep areas. No food workers reported illness prior to the event.

Twenty-two wait staff served food on Tuesday, May 1. Eight reported eating leftover eggs Benedict and experiencing subsequent gastrointestinal illness. Three stool samples were positive for *Salmonella*

Enteritidis PFGE subtype SE82. Three stool samples were negative. Two individuals were lost to follow-up and did not submit a stool sample.

A traceback investigation initiated by the Minnesota Department of Agriculture (MDA) identified two different Minnesota farms as the possible suppliers of the implicated shell eggs to the hotel. MDA visited one farm (Farm A) on June 11 and the other farm (Farm B) on July 17 to assess environmental conditions. Twenty-eight environmental samples were taken from the fourteen barns at Farm A. They included manure drags from each barn and swabs of the egg conveyor belts. Seven environmental samples were taken from the one barn at Farm B. They included three samples from the manure removal belt and four samples from the egg conveyor belt. For each sample area, five sites were swabbed. All environmental samples were negative for *Salmonella* Enteritidis.

The Maine Department of Agriculture was unsuccessful in tracing the source of the eggs from the Maine outbreak.

This was an outbreak of *Salmonella* Enteritidis infections associated with eggs Benedict served at a food stylist convention held at a Minneapolis hotel. Unpasteurized shell eggs are a well-established vehicle for *Salmonella* Enteritidis infections. Unpasteurized shell eggs were used in the preparation of both the poached eggs and hollandaise sauce. The MDA traceback investigation identified two different Minnesota farms as the possible suppliers of the eggs to the hotel. The subsequent environmental investigation at the two farms did not recover *Salmonella* Enteritidis.

(21)
Viral Gastroenteritis Associated with a Wedding Rehearsal Dinner at a Private Home

May Anoka County

On Monday, May 21, 2001 the Minnesota Department of Health (MDH) received a foodborne illness complaint. The caller had attended a wedding rehearsal dinner held in a private home in Blaine on Thursday, May 17, and reported that several attendees subsequently became ill with gastrointestinal symptoms. Many of the persons at the rehearsal dinner also attended the wedding ceremony on Saturday, May 19 as well as a subsequent dinner held at a restaurant. However, all of the ill persons had become symptomatic prior to events held on May 19, and no illnesses were reported among persons who had attended the wedding but not the rehearsal dinner. Therefore, an investigation focused on the rehearsal dinner was initiated.

Lists of attendees and food items served at the dinner were obtained from the caller. 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 ($\geq$3 loose stools in a 24-hour period) after attending the dinner. No stool samples were collected.

All twelve attendees were interviewed, and all (100%) met the case definition. All 12 (100%) had diarrhea, seven (58%) had vomiting, seven (58%) had cramps, one (8%) had fever, and no one had bloody stools. One case visited an emergency room; no one was hospitalized. The median incubation was 35 hours (range, 15.5 to 45.5 hours), and the median duration of illness was 53 hours (range, 11 to 166 hours). All attendees denied any recent gastrointestinal illness in themselves or in their households prior to the dinner.

Food items served at the dinner were frozen lasagna, both meat and vegetarian, buttered garlic bread purchased from stores and baked in the home, and a spinach salad and rhubarb crisp dessert both prepared in the home. Because all of those interviewed were ill, statistical analysis of food items consumed was not possible. No one food item was common to all of the cases.

The clinical and epidemiologic features of these illnesses associated with a rehearsal dinner were characteristic of viral gastroenteritis caused by a Norwalk-like calicivirus. No food vehicle or source of contamination was identified.

(22)

Salmonella Enteritidis Infections Associated with Eggs Served at a Restaurant

June Martin County

In July 2001, the Minnesota Department of Health (MDH) Public Health Laboratory received by routine surveillance several isolates of *Salmonella* Enteritidis that were indistinguishable by pulsed-field gel electrophoresis (PFGE) using two different enzymes. This subtype of *Salmonella* Enteritidis was designated SE77B52. Routine interviews of the cases by MDH epidemiologists revealed that several of the cases had patronized a restaurant in Fairmont. The restaurant was contacted, and an investigation was initiated on July 16.

A confirmed case was defined as a person from whom SE77B52 was isolated and who either reported eating at the restaurant during the 7 days before the onset of their symptoms or who worked at the restaurant. A suspect case was defined as a person who had diarrhea ($\geq$3 loose stools in 24 hours) but did not submit a specimen for testing and who reported eating at the restaurant during the 7 days before the onset of their symptoms. All isolates from confirmed cases were sent to the Centers for Disease Control and Prevention (CDC) for phage typing.

A case-control study was conducted to evaluate the restaurant as the source of the outbreak. All cases with the outbreak PFGE pattern that were identified through surveillance were included regardless of whether or not they reported eating at the restaurant. Community controls were recruited using a sequential digit-dialing method and interviewed using the same interview form as the cases. The study was initiated on July 16 and stopped on July 17 when there was extensive media coverage of the investigation.

On July 11, prior to the identification of the outbreak, a sanitarian from Human Services of Faribault and Martin Counties (HSFMC) inspected the restaurant in response to a complaint. On July 16 sanitarians from HSFMC and MDH inspected the restaurant, reviewed food preparation procedures, and observed cleaning of the facility. Thirty-nine swab samples of food and non-food contact surfaces were obtained for testing. The restaurant voluntarily closed for cleaning on the same day the inspection was conducted. All ready-to-eat foods and shell eggs were discarded. The restaurant reopened on July 17 after it had been thoroughly cleaned and employees had undergone mandatory training provided by the sanitarians emphasizing proper handwashing, proper cooking and holding temperatures of potentially hazardous foods, and prevention of cross-contamination.

HSFMC Community Health nurses and an MDH epidemiologist interviewed restaurant employees about recent gastrointestinal illness and job duties. All restaurant employees were asked to submit stool specimens for *Salmonella* testing. Employees who reported gastrointestinal illness in the month prior to

the investigation or whose stool tested positive for *Salmonella* were excluded from work until two consecutive stool specimens obtained at least 24 hours apart tested negative for *Salmonella*.

The Minnesota Department of Agriculture initiated a traceback investigation of shell eggs used by the restaurant. A request for additional traceback of eggs was submitted to the United States Food and Drug Administration (FDA).

Case-control study:
Thirteen persons from whom SE77B54 was isolated were identified and included in the case-control study. Only eight community controls were recruited before the study was discontinued. On unmatched analysis, eating at the restaurant was significantly associated with illness (12/13 cases vs. 1/8 community controls; odds ratio, 84; 95% confidence interval, 3.3 to 4,077; $p<0.001$).

Case information:
Among patrons of the restaurant, twelve confirmed cases and four suspect cases were identified. Two of the confirmed cases and two of the suspect cases were South Dakota residents. All 16 cases reported diarrhea, 11 of 15 (73%) reported fever, 10 of 15 (67%) reported vomiting, and seven of 15 (47%) reported bloody stools. Illness onsets ranged from June 24 to July 19. Known meal dates at the restaurant ranged from June 23 to July 16. Incubation periods ranged from 1 to 79 hours (median, 55 hours). The duration of illness ranged from 17 to 217 hours (median, 159 hours). Four (25%) cases were hospitalized, with duration of hospital stay ranging from 1 to 3 days (median, 2 days). All isolates were phage-type (PT) 13a. Fourteen of 16 (88%) cases ate egg dishes, including eggs over-easy, omelettes and French toast.

Employee interviews revealed that 15 employees reported gastrointestinal symptoms in the month prior to the investigation. Onset of symptoms ranged from June 22 to July 15. Two of 72 (3%) employees tested were positive for SE77B52. Isolates from both employees were PT13a. One of the two employees who tested positive reported experiencing diarrhea and vomiting, with onset of symptoms on July 5. The other employee who tested positive had mild gastrointestinal illness with onset on July 4.

Environmental evaluation and inspection:
Seven critical and four non-critical violations were observed at the restaurant during the inspection conducted on July 11. Numerous critical violations were also observed during the inspection conducted as a result of the outbreak investigation. The violations included inadequate handwashing by restaurant employees, cross-contamination between raw foods and ready-to-eat foods, excessive employee hand contact with ready-to-eat foods, poor employee hygienic practices resulting in cross-contamination of clean utensils, potentially hazardous food temperatures, unclean food contact surfaces, and only cold water available for handwashing. Several employees reported having worked while ill with gastrointestinal symptoms.

Thirty-nine environmental samples were collected, and they were all negative for *Salmonella.*

Traceback investigation:
The Minnesota Department of Agriculture initiated a traceback investigation of the eggs. The restaurant received two shipments of eggs each week, on Tuesdays and Fridays, from Supplier A. Eggs received on Fridays (June 15, 22, and 29) came from Supplier B, an Ohio company. Eggs received on Tuesdays came from multiple other locations, including Iowa.

The number of meals served at the restaurant during the outbreak period was obtained, and attack rates for the days following each shipment of eggs were calculated. Tuesdays and Fridays were excluded due to possible use of eggs from multiple shipments. The attack rate for Saturdays, Sundays and Mondays during the outbreak was 14 cases per 5,604 meals served, whereas the attack rate for Wednesdays and Thursdays was zero cases per 2,963 meals served (risk ratio, undefined; p=0.004). In other words, eating at the establishment on days following the Friday egg shipments from Ohio was associated with illness. The Ohio Department of Agriculture was contacted; however, more detailed information regarding the source of the eggs was not provided.

A request for a traceback to identify the farm of origin of the eggs was submitted to the FDA. As of January 2002, the FDA had not responded to the request.

This was an outbreak of *Salmonella* Enteritidis SE77B54 infections associated with a restaurant in Fairmont and identified during routine surveillance. Shell eggs from an Ohio company were associated with illness. Food preparation procedures, cross-contamination, and/or infected food workers could account for the two cases that reported not eating eggs. The farm of origin of the eggs has not been identified.

(23)
Viral Gastroenteritis Associated with a Restaurant

July Dakota County

On Wednesday, July 25, 2001 the Minnesota Department of Health (MDH) was notified by the owner of a restaurant in Hampton that complaints of illness were made by patrons from two separate parties who had eaten at the establishment on Friday, July 20.

The MDH sanitarian that covers the city of Hampton was contacted, and an investigation was initiated. The restaurant owner provided the names and phone numbers of the patrons who made the initial complaints. Additional names and phone numbers of restaurant patrons were obtained from the reservation list and from the patrons who made the complaints. MDH staff interviewed patrons about illness history and food consumption. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. An MDH sanitarian visited the restaurant on July 25 to determine if there were any ill food workers, speak with management staff, and evaluate food preparation and handling procedures. An MDH sanitarian returned to the establishment on July 26 to get the names and phone numbers of restaurant employees and to further evaluate food preparation procedures. MDH staff interviewed foodhandlers to determine illness history for themselves and family. Stool kits were given to two recently ill patrons; however, they did not submit stool samples.

Twenty-three patrons were interviewed. Nine (39%) met the case definition, 13 (57%) reported no illness, and one (4%) had mild gastrointestinal symptoms that did not meet the case definition. All nine cases (100%) had diarrhea, eight (89%) had vomiting, four (44%) had fever, and no one reported bloody stools. No one was hospitalized. The median incubation period was 35 hours (range, 3.5 to 64 hours).

No food items were statistically associated with illness. Seventeen restaurant employees were interviewed, and fourteen denied any recent gastrointestinal illness or ill household members. Two individuals who prepared salads on July 20 reported symptoms consistent with those of the patrons; however, the onset date for both employees was July 22 (simultaneous with the patrons' onset). A server who had worked on the evening of July 20 reported gastrointestinal symptoms for herself (onset

on July 14) and her son (onset on July 19). This server's foodhandling activities included preparing dinner salads, for which she did not wear gloves.

The MDH sanitarian found no critical violations at the restaurant that would have contributed to a foodborne illness outbreak. The sanitarian made recommendations to the restaurant concerning the importance of proper handwashing and glove use, and emphasized the additional importance of these measures for workers with ill children at home. The sanitarian also emphasized the importance of using separate sinks for washing produce and meat/seafood products.

The epidemiologic and clinical characteristics of these illnesses were characteristic of viral gastroenteritis caused by a Norwalk-like calicivirus. No specific food vehicle was identified. The likely source of contamination was a recently ill server who prepared salads.

(24)
***Bacillus cereus* Intoxications Associated with Fried Rice Served at a Restaurant**

July Dakota County

On July 26, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline was called by a restaurant patron who reported a suspected foodborne illness that began after she ate lunch at a restaurant in Eagan. On August 9, 10, 21, and 22 six additional complaints were made, either via the foodborne illness hotline, e-mail, or the main phone number of the Acute Disease Investigation and Control Section. In all, seven complaints were received that involved nineteen ill patrons.

MDH staff interviewed seventeen of the nineteen cases. A stool kit was given to one actively ill patron. The restaurant was inspected by an MDH sanitarian on August 9 and 10, and several critical violations were noted including the improper cooling and storing of fried rice. A sample of fried rice was taken for bacterial culture. Orders were issued for the correction of all violations, and safe foodhandling procedures were reviewed with the owner both verbally and written in Vietnamese. MDH staff did an on-site investigation again on August 22 after more complaints were received, and at that time it was recommended the restaurant close temporarily until compliance with orders could be demonstrated. The restaurant reopened on August 23 after an inspection by the MDH sanitarian.

All seventeen cases interviewed reported eating fried rice. Fourteen patrons (82%) reported diarrhea, thirteen (76%) reported vomiting, and ten (59%) reported abdominal cramps. Two people (12%) reported fever, and no one reported bloody stools. The median incubation period was 2 hours (range, 0.5 to 6.5 hours), and the median duration of illness was seven hours (range, 2 to 24 hours). A stool sample from an ill patron tested positive for *Bacillus cereus*, as did a sample of fried rice from the restaurant.

The epidemiologic and clinical characteristics of these illnesses were consistent with *Bacillus cereus* intoxications. The likely food vehicle was fried rice that was not properly cooled and stored.

(25)
Calicivirus Gastroenteritis Associated with a Catered Wedding Reception

July Olmsted County

On August 1, 2001, a sanitarian at Olmsted County Public Health Services (OCPHS) received a phone call from a person who reported that at least one dozen people became ill following a wedding they had attended on July 27. The wedding reception was held at a licensed club that provided most of the food. Other foods served at the reception that were not prepared by the club included cake and rolls from two separate local bakeries, homemade punch, and homemade candy. In addition, some wedding party members and other guests had food exposures at the groom's dinner served at a local restaurant, and pre-wedding appetizers at the church. Based on the initial information, an investigation was initiated by OCPHS. A menu of the foods served at the wedding reception, groom's dinner, and pre-wedding gathering at the church was obtained from the reporting party including the source of the foods, who prepared the foods, where they were prepared, and how they were served. The Minnesota Department of Agriculture (MDA) was informed of the investigation because of their jurisdiction over the two bakeries.

A list of attendees with phone numbers was provided to OCPHS. Interviews were completed to obtain illness histories and food exposures using a standard questionnaire. Stool samples for bacterial and viral testing at the Minnesota Department of Health were requested from those reporting illness. For the purposes of this investigation a case was defined as a person who experienced diarrhea (≥ 3 loose stools in a 24-hour period) or vomiting and attended the wedding reception.

One hundred-forty people attended the wedding reception, and 40 attendees were interviewed. Twenty-five (63%) of the 40 interviewed (63%) met the case definition. Twenty-two cases (88%) had cramps, 21 (84%) had diarrhea, 15 (60%) had vomiting and 4 (16%) reported fever. No one was hospitalized. The median incubation from the wedding meal was 43 hours (range, 25 to 77 hours). The median duration of illness was 36 hours (range, 8 to 81 hours). The case with an incubation of 77 hours became ill 28 hours after their spouse's illness onset, which may indicate a secondary case. This case was the only person who submitted a stool sample; the stool was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool sample was positive for calicivirus. No specific foods or eating locations were statistically associated with illness, including eating at the groom's dinner, eating at the pre-wedding gathering, and eating the homemade foods.

Three separate wedding guests reported experiencing gastrointestinal illness just prior to the wedding. Of the three wedding events where there was food served, the wedding reception meal was the only event attended by all of the cases.

Sanitarians evaluated the food preparation of all the foods prepared at the club. There were no environmental conditions at the facility that were clearly associated with illness. At the wedding reception, food was served buffet-style with the caterer using utensils to serve guests all of the foods for the initial meal, except for the cake. The cake, as well as second helpings of all the buffet items, were self-served by the wedding guests. The food remained on the buffet line for approximately one hour. No other complaints were received by MDA about the bakeries that provided the cake and rolls. No illness was reported in the persons who made the homemade punch and candy; however, further evaluation of their preparation was not made.

No food workers reported illness before or during the food preparation period. However, one food

server from the catering company reported illness onset 35 hours after the meal. This worker reported eating the buffet foods after all of the guests were served. This worker reported only serving the foods using utensils, and was not involved in the food preparation.

This was an outbreak of calicivirus gastroenteritis at a wedding reception. Several guests were identified as being ill before the meal, and guests served themselves on the buffet; it is likely this was a foodborne outbreak due to an infected guest at the wedding reception who contaminated food item(s) on the buffet line. The ill food worker likely became sick from consuming food from the buffet after the guests had eaten, and was not the source of the outbreak.

(26)
Viral Gastroenteritis Associated with Taco Pizza From a Convenience Store

July — Mille Lacs County

On July 31, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline that several persons had become ill after eating pizza that was purchased on July 28 from a convenience store in Mille Lacs County. Four varieties of pizza were purchased and brought to a party where other food and beverages were also served.

The party hostess provided a list of attendees and food items served at the party. MDH staff interviewed attendees. On August 1, the Minnesota Department of Agriculture (MDA) and an MDH field epidemiologist conducted a joint inspection of the facility and interviewed food service workers.

A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after attending the party. Stool collection kits were delivered to two symptomatic persons.

Fourteen of seventeen (82%) persons known to have attended the party were interviewed; six (43%) met the case definition. Of the six cases, five (83%) had diarrhea, five (83%) had vomiting, and three (50%) reported fever. The median incubation period was 32 hours (range, 26 to 78 hours), and the median duration of illness was 37 hours (range, 30 to 60 hours).

Of the three store employees known to have been involved in the preparation of the pizzas, none reported illness in themselves or family members. Taco pizza consumption was associated with illness (4/6 cases vs. 0/8 controls; odds ratio, undefined; p=0.01). Several food and beverage items brought to the party by other guests were not statistically associated with illness. Those items included a fruit salad, pasta salad, potato chips, bread, an ice cream cake and canned sodas.

MDA inspected of the facility and subsequently observed the taco pizza preparation methods; no violations in product storage or procedures were found. The two stool kits delivered to ill attendees were not returned for testing. No other consumer complaints were received by the establishment, MDA, or MDH.

This outbreak fit the clinical and epidemiologic profile of viral gastroenteritis caused by a Norwalk-like calicivirus. The taco pizza was a likely vehicle; however, the source of contamination was not identified.

(27)
Salmonella Newport Infections Associated with a Restaurant

August Olmsted County

On August 16, 2001 Olmsted County Public Health Services (OCPHS) received a report from the Mayo Clinic Infection Control Practitioner of two patients with Group C2 *Salmonella*. OCPHS collected the patient demographic information and forwarded it to the Minnesota Department of Health (MDH), Acute Disease Investigation and Control Unit, for interviewing. By noon on August 17, MDH reported that both cases had eaten at the same restaurant: one on August 2 and the other on August 5. No other common exposure was identified. Based on this information, OCPHS initiated an investigation that afternoon. By the end of the afternoon on August 17, MDH had interviewed 5 individuals with Group C2 *Salmonella*, and all had eaten at the same restaurant in Rochester.

The restaurant was a large buffet-style Chinese restaurant that reportedly served approximately 800 people a day during the time of the outbreak. The buffet line included both Chinese and American food with over 75 main entrees, soups, salads and desserts. There was also a Mongolian grill line that served cook-to-order entrees.

OCPHS sanitarians and an MDH epidemiologist visited the restaurant the afternoon of August 17. Due to the potential for ongoing transmission, the restaurant voluntarily closed until interventions were in place to reduce the risk of disease transmission.

The restaurant owner was interviewed and asked to provide a complete menu, a list of food workers, and a list of patrons who ate at the restaurant during the suspect time period. Credit card receipts were used to construct the patron list; checks were not available. All patron interviews and the statistical analysis of food histories were conducted by MDH. A case was defined as a restaurant patron who was culture-positive for *Salmonella*.

Food workers could not be directly interviewed because of multiple language barriers. However, all were instructed through the restaurant owner that they were excluded from work until 2 negative stool samples, collected 24 hours apart, were received. All workers were given stool specimen kits with translated instructions on how to submit the samples. Specimens were submitted to MDH for bacterial culture. Prior to closure, all food workers were observed for personal hygiene and food preparation practices.

A complete assessment of the food preparation of the common foods eaten by the cases was made using the principles of Hazard Analysis Critical Control Points (HACCP). There were no foods available from meals eaten by the cases; however, other foods in the restaurant on August 17 were sampled including raw chicken. Food samples were submitted to the Minnesota Department of Agriculture (MDA) laboratory for *Salmonella* culture.

OCPHS contacted the local medical community on August 17 to inform them of an outbreak of *Salmonella* in the community and asked them to consider *Salmonella* infection, including stool culturing, for patients presenting with diarrhea and fever.

Nine restaurant patrons were diagnosed with *Salmonella* Newport, and there were two secondary infections in family members of the primary cases. All cases had the same pulsed-field gel electrophoresis (PFGE) subtype, designated NEW114. This organism was resistant to the following

antibiotics: ampicillin, chloramphenicol, streptomycin, sulfonamides, tetracycline, and cephalothin. It had intermediate sensitivity to ceftriaxone, and it was sensitive to trimethoprim-sulfamethoxazole and ciprofloxacin. Eight of the primary cases (89%) were female. Ages ranged from 41 to 82, with a median age of 62 years. The most predominant symptoms were diarrhea (100%), abdominal cramps (89%) and fever (78%). Incubation periods ranged from 1 to 6 days, with a median incubation of 2 days. Because many of the cases were still symptomatic at the time of interview, the duration of illness could not be calculated. Three cases were hospitalized. The duration of hospitalizations were 2, 4 and 7 days, respectively.

MDH interviewed approximately 72 other patrons from the credit card receipt list, and did not identify any other cases. Statistical analysis on specific food items was not conducted, due to the lack of recall of specific foods consumed from the buffet (possibly because of the variety and number of foods available). Meal dates for the primary cases ranged from August 2 through August 12. No additional cases of *Salmonella* were associated with eating at the restaurant since August 18 when the restaurant reopened.

The food preparation assessment identified conditions that increase the risk for *Salmonella* transmission, including potential for cross-contamination between raw chicken and ready-to-eat and prepared foods. The chicken prep for all of the menu items began with whole chickens that were completely de-skinned in one motion, then cut with a meat cleaver or knife into portions used for various menu items. Following cutting, they were further prepared or cooked, or stored in a cooler for later use. Observation of the chicken prep process identified opportunities for raw chicken juice to contaminate nearby food contact surfaces as evidenced by raw chicken juice on the adjacent dessert traying area. This cross-contamination potential was increased during the de-skinning process, and in the volume of chicken prepped at one time as demonstrated by the presence of approximately 20-30 whole, raw chickens stacked on the prep table. Raw chicken and shrimp were stored over ready-to-eat foods in the walk in cooler. The following foods in the self-serve buffet line were held at temperatures outside the safe holding range: seafood salad at 54°F; macaroni salad at 55°F; baked chicken at 121°F; chicken with garlic sauce at 120°F; seafood combo at 123°F; General Tsao chicken at 135°F; and crab rangoon at 107°F. "Time" was reported to be a control for the foods on the buffet line, i.e., portions of food placed on the buffet line were reportedly eaten within a 2-hour period. However, there were no records to verify control of this procedure.

Other problems observed included:

- Preparation of crab rangoon by the wait staff in the dining room where handwashing facilities were not conveniently available.
- Previously prepared crab rangoon that was frozen only reaching an internal temperature of 50°F after reheating in the deep fryer (thawed rangoon reached a safe reheating temperature of 190°F).
- Previously prepared spring rolls that were frozen only reaching an internal temperature of 44°F after reheating in the deep fryer (thawed spring rolls reached a safe reheating temperature of 175°F).
- Handsink not accessible in the food preparation area.

All food samples, including five raw chicken samples were negative for *Salmonella*. Seventeen kitchen staff, bar staff and servers worked at the restaurant. All of these food workers were culture-negative for *Salmonella*.

Interventions implemented during the initial 24 hours the restaurant was closed included:

- Excluding all existing food workers from work until 2 negative stool samples were received,
- Discarding all ready-to-eat and previously prepared foods that would not be cooked, and
- A thorough cleaning and sanitizing of all food contact surfaces.
- Training for management and replacement staff was provided before reopening as well as additional hazard analysis of food preparation procedures.

In addition to the interventions during the time of closure, the following actions were taken by the restaurant owner after the restaurant reopened:

- All hot foods were held at 140°F or higher.
- All cold foods were held at 41°F or lower.
- All foods reach safe cooking temperatures.
- All handsinks were accessible and properly supplied with soap, paper towels and a fingernail brush.
- Designated areas were identified in the kitchen for specific food preparation practices.
- On August 22, a risk control plan and agreement was put into place. The operator started a self-inspection process two times per day on August 23 and was implemented for one month.

This was an outbreak of *Salmonella* Newport infections associated with a restaurant. The exact cause of this outbreak was not determined. No specific food item was statistically associated with illness, which is not unusual for a buffet-type meal where recall of foods eaten is often difficult. The potential for cross-contamination between raw chicken (a frequent source of *Salmonella*) and other foods may have contributed to the outbreak.

(28)
Gastroenteritis Associated with a Restaurant

August Hennepin County

On August 21, 2001 the Minnesota Department of Health (MDH) Acute Disease Investigation and Control Section received a report of gastrointestinal illness from a party of three who dined at a restaurant in Minneapolis on August 20. The complaint was faxed to Minneapolis Environmental Health (MEH) and an investigation was initiated.

All persons mentioned in the complaints were interviewed by MDH about illness history and food and beverages consumed at the restaurant. A case was defined as any person who dined at the restaurant and subsequently developed vomiting or diarrhea (≥3 loose stools in a 24-hour period). Stool samples were collected from two individuals. Environmental health specialists from MEH evaluated the restaurant on August 22 and obtained samples of deviled eggs for analysis. Laboratory testing was performed at the MEH laboratory.

All three patrons met the case definition. Of the three cases, all reported diarrhea, cramps, and fever; two (67%) reported vomiting. Illness onsets occurred on August 20; the incubation period ranged from 30 minutes to 5.5 hours. Duration of illness ranged from 12 to 15 hours. Food items consumed included crab cakes, deviled eggs, and margaritas.

The stool sample from one case was positive for *Bacillus cereus*, *B. cereus* (diarrheal type) enterotoxin, *Staphylococcus aureus*, and *S. aureus* enterotoxin; the sample from another case was positive for *B.*

cereus and *B. cereus* enterotoxin (diarrheal type). Pulsed-field gel electrophoresis (PFGE) patterns of the *B. cereus* isolates from the two positive cases were indistinguishable from each other. Food samples were negative for bacteria and bacterial toxins.

During the environmental assessment, MEH environmental health specialists found no critical foodhandling violations in the preparation of the crab cakes or deviled eggs.

This was an outbreak of bacterial foodborne intoxications associated with a restaurant in Minneapolis. The isolation of *Bacillus cereus* with an indistinguishable PFGE pattern from two cases suggests that *B. cereus* was the causative agent. *Staphyloccocus aureus* may also have contributed to the outbreak. No food item was conclusively identified as the vehicle for the outbreak.

(29)
E. coli O157:H7 Infections Associated with a Restaurant

August Douglas County

In September 2001, the Minnesota Department of Health (MDH) Public Health Laboratory received through routine surveillance several isolates of *E. coli* O157:H7 with an indistinguishable pulsed-field gel electrophoresis (PFGE) subtype pattern (MN31). 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 *E. coli* O157:H7 cases. Routine interviews of the cases by MDH epidemiologists revealed that several cases had patronized a restaurant in Alexandria. The Douglas County Environmental Health (DCEH) sanitarian was notified, and an investigation was initiated on September 6. The DCEH sanitarian was unavailable for the initial inspection, so MDH sanitarians along with other Douglas County Public Health interim co-directors conducted the on-site investigation.

On September 6, 2001, two MDH sanitarians inspected the restaurant, reviewed food preparation procedures, observed clean-up of the facility, and inquired about recent gastrointestinal illness among restaurant employees. The restaurant was closed for cleaning during the inspection. All ready-to-eat foods, foods that were potentially cross-contaminated, and raw chicken and beef were discarded. The restaurant reopened the next day (September 7) after it had been thoroughly cleaned and inspected again.

The DCEH sanitarian conducted full inspections on September 12 and 14. The restaurant was closed again on September 14 and was not allowed to reopen until September 17, after the restaurant staff was retrained on proper handwashing, proper cooking and holding temperatures of potentially hazardous foods, and prevention of cross-contamination.

A case was defined as a person from whom *E. coli* O157:H7 MN31 was isolated and who reported eating at the restaurant during the week before the onset of their symptoms. The Minnesota Department of Agriculture (MDA) conducted cultures of food items for *E. coli* O157:H7.

Five confirmed cases were identified. Detailed symptom history was obtained on four of the cases. All four cases reported diarrhea, vomiting, blood in the stools, and abdominal cramps, and two (50%) reported fever. Illness onsets ranged from August 24 to August 27. Known meal dates at the restaurant were August 21 and August 22; however, one case may have been exposed on an earlier date. The incubation period ranged from 3 to 5 days (median, 4 days). At the time of the interviews, only one case had recovered, making the shortest duration of illness 6 days. All five cases were hospitalized. One case developed hemolytic uremic

syndrome/thrombotic thrombocytopenic purpura and required prolonged hospitalization. Among the other four cases, the duration of hospital stay ranged from 1 to 6 days (median, 3 days).

Cases ate a variety of foods from a buffet, including various chicken dishes, pork, vegetables, lo mein, and fried rice. Because of the small number of cases and the variety of foods eaten, no single food item was identified as the vehicle for infection.

Twelve critical and 13 non-critical violations were identified by MDH sanitarians at the restaurant on September 6. The inspection revealed ample opportunity for cross-contamination; ready-to-eat foods and raw vegetables were kept under the raw chicken preparation table, raw vegetables were stored adjacent to or under raw chicken and pork, raw products were stored on top of canned beverages, food contact surfaces were not sanitized, and the cutting board was worn and had deep grooves that could harbor bacteria. Improper holding temperatures were observed; cooked chicken was kept at 49°F to 69°F, and raw eggs were kept at 79°F. Along with observed deficiencies in handwashing, there was no fingernail brush or towels at the handwashing sink, indicating that handwashing was likely inadequate. The restaurant kitchen was unclean, and the concentration of chlorine in the dishwasher was below the acceptable range. The restaurant did not have a certified food manager on staff. Orders were issued addressing handwashing and other violations. No gastrointestinal illness was reported among employees. Although the restaurant met standards for reopening, less than a week later the same problems with cross-contamination and inadequate holding temperatures were found, leading to closing of the restaurant a second time.

A sample of boneless beef chuck was obtained from the restaurant and sent to MDA for testing. The beef tested negative for *E. coli* O157:H7; however, this beef was not from the same shipment of beef served during the known exposure period.

This was an outbreak of *E. coli* O157:H7 infections associated with a restaurant in Alexandria and identified during routine surveillance. The specific food vehicle was not identified. Due to the opportunity for cross-contamination, multiple contaminated dishes could have resulted from a single contaminated product. A single product used in multiple dishes could not be ruled out.

(30)
Clostridium perfringens Intoxications Associated with Roast Beef and Gravy Served by a Restaurant

September Redwood County

On September 17, 2001 the Minnesota Department of Health (MDH) was notified by the Redwood/Renville Environmental Health sanitarian of illness among 13 employees at a worksite in Redwood Falls on September 14. The company denied any exposures (i.e. parties, celebrations, snacks/treats) other than the catered daily meal that was delivered to the company by a restaurant in Redwood Falls. The restaurant prepared a daily meal at its facility and transported the meal to the worksite at about 10:40 A.M. each morning. The food would then be placed in steam tables at the worksite and served to employees during two shifts at 11:00 and 11:30 A.M.

On September 17 the sanitarian from Redwood/Renville Environmental Health contacted the MDH consulting sanitarian for that area. Together, both sanitarians conducted an inspection of the restaurant, visited the worksite cafeteria, obtained the worksite lunch menu for the week of September 10, and obtained employee lists from the worksite and the restaurant. The restaurant manager reported that he

did not receive any other complaints from the restaurant portion of the business, and the restaurant did not cater to any other worksites. In addition, the manager reported that none of the employees had been ill in the few days prior to the complainants' meal date. A case was defined as a person with onset of vomiting or diarrhea (≥3 loose stools in a 24-hour period) after eating the restaurant's food at the worksite cafeteria. No stool samples were collected from the ill patrons; however, a sample of the roast beef and beef juices served on September 13 were sent to MDH for testing.

Twenty-two worksite employees were interviewed, and 10 met the case definition. Of the 10 cases, 10 (100%) reported diarrhea, 10 (100%) reported cramps, and one (10%) reported bloody diarrhea. Dates of illness onset were September 13 and 14. Based on the environmental health assessment and epidemiological evidence, the meal from Thursday, September 13 was used as a reference to calculate the incubation period and duration of illness. The median incubation was 10 hours (range, 6 to 17 hours) and the median duration was 28 hours (range, 9 to 91 hours).

Eating during the second lunch period on Thursday (11:30 A.M.) was significantly associated with illness (10 of 10 [100%] cases vs. 3 of 12 [25%] controls; odds ratio, undefined; lower limit of 95% confidence interval, 3.5; $p = 0.0004$).

Five of six foodhandlers at the restaurant were interviewed about food preparation duties and recent or current illness. None of the employees reported any recent or current illness in themselves or their household members.

At the time of the restaurant inspection, food for the worksite meal was being cooled much in the same way it was done on September 13. Although the meal was placed in the walk-in cooler at about 12 PM, the temperature of the meal was 105°F at about 2 pm. Proper cooling procedures require that food be cooled quickly to 70° F or below within 2 hours, then cooled below 41°F within an additional 4 hours. During the interview it was ascertained that the beef served on September 13 was not properly cooled. A 14-pound piece of beef would need to be cut into smaller pieces to cool properly, but this was not done. Gravy for the September 13 meal was made from leftover meat juices from September 12. The use of leftover sandwiches, salads, and other ingredients such as salad dressing also was of concern. These items must be clearly marked with the date of preparation and must be discarded 7 days after the package is opened or the date of preparation. In addition, the practice of disassembling the unconsumed sandwiches and re-using the meat seemed risky. Handwashing procedures were not observed during the inspection because food preparation was not taking place. Finally, ice was used as a medium for keeping cold foods cold during transport to and holding at the worksite. Some cold items, such as crocks of homemade salad dressing, were not used and may have been returned the next day.

Laboratory test results from the roast beef and beef juice served on Thursday, September 13 indicated proliferate contamination. Multiple bacterial agents were isolated from the food sample, including *Clostridium perfringens* (enterotoxin A present), *Staphylococcus aureus* (enterotoxin A, B, C, and D not found), *Klebsiella pneumoniae*, *Enterobacter cloacae*, coagulase negative *Staphylococcus*, and *Lactobacillus* species.

This was an outbreak of gastroenteritis in persons who ate a lunch catered by a restaurant in their worksite cafeteria. Based on the environmental health food preparation review, the laboratory testing of the food sample, and the patrons' incubation periods, symptoms and meals, *Clostridium perfringens* is most likely the agent that caused their illnesses. During a restaurant inspection conducted 4 days after the complainants' meal date, the sanitarians identified numerous problems with food cooling procedures, cold food storage and transport, and improper re-use of foods.

(31)
Gastroenteritis Associated with a Restaurant

September Ramsey County

On September 19, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a report of gastrointestinal symptoms from a couple that dined at a restaurant in Little Canada on September 16. The complaint was faxed to the St. Paul-Ramsey County Department of Environmental Health. On September 21, a second complaint was received by MDH; this complaint involved a different couple that had gastrointestinal symptoms after eating at the same restaurant on September 20. This report was also faxed to the St. Paul-Ramsey County Department of Environmental Health, and an investigation was initiated.

All persons mentioned in foodborne illness complaints were interviewed by MDH about illness history and food and beverage items consumed at the restaurant. Restaurant management also provided a list, based on credit card signatures, of people who had possibly dined at the restaurant on September 16 or September 20. A case was defined as any person who had dined at the restaurant and who subsequently became ill with vomiting or diarrhea ($\geq$ 3 loose stools in a 24-hour period). No stool samples were collected.

Environmental health specialists from MDH and from St. Paul-Ramsey County evaluated the restaurant on September 21 and September 28. At the time of the September 21 visit, the restaurant reported another complaint from a group of four people that dined on September 16; MDH followed up with this group as well.

Of the eight patrons interviewed, six (75%) met the case definition. Of the six cases, all six (100%) reported diarrhea and cramps; no one reported vomiting, fever, or bloody stools. Dates of illness onset were September 16, September 20, and September 21. The median incubation period was 4 hours (range, 2 hours to 8.5 hours). The median duration of illness was 23 hours (range, 21 hours to 33 hours).

No food items were statistically associated with illness. Five out of the six cases and both of their non-ill meal companions consumed steaks. Because the credit card receipts provided by the restaurant contained few legible signatures, only one patron was contacted by that means; they dined in a group of four on September 20, and no one was ill. They consumed steaks and salads.

During their September 21 and September 28 visits, sanitarians from MDH and from St. Paul-Ramsey County did not note any critical foodhandling problems.

The clinical and epidemiologic characteristics of this outbreak are consistent with a bacterial toxin-mediated illness. No food item was conclusively identified as the vehicle for the outbreak.

(32)
Viral Gastroenteritis Associated with Vegetable Salad Served at a Catered Wedding Reception

October Washington County

On Friday, October 12, 2001 the Minnesota Department of Health (MDH) received an illness complaint through the foodborne illness hotline. The complaint was forwarded on to the Washington County

Department of Public Health and Environment (WCDPHE) the same day. The complaint stated that there was an outbreak of gastrointestinal illness among persons who attended a wedding reception held on Saturday, October 6 at a country club restaurant in Forest Lake. WCPDHE initiated an investigation in cooperation with MDH.

Lists of food and beverage items served during the wedding reception, guests, and foodhandlers were obtained. Investigators interviewed persons attending the wedding reception about their food and beverage consumption at the reception and their illness history. The restaurant manager and employees also were interviewed regarding their illness history, any recent complaints from non-wedding reception patrons, and foodhandling and preparation practices. Local area clinics, hospitals and other local public health departments were not notified of the investigation given the finite exposure to an immediately identifiable population.

A case was defined as any person who attended the reception and who subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). One stool specimen was collected by a health care provider and submitted to a clinical laboratory for enteric bacterial culture.

A total of 210 individuals attended the reception. The country club restaurant served 194 meals to wedding guests and an unspecified number of meals to approximately 50 non-wedding party patrons in their public dining room. The non-wedding patrons ordered food items off the restaurant's standard menu, whereas wedding guests were served preordered and plated foods. The wedding food items were not standard menu items.

Ninety-seven of the 194 wedding guests (50%) who ate at the reception were interviewed, and 40 (41%) met the case definition. Three symptomatic individuals did not meet the case definition and were excluded from analysis. Thirty-five cases (88%) reported diarrhea, 26 (65%) reported vomiting, and 21 (53%) reported both symptoms. Thirty-three cases (83%) reported abdominal pain, seventeen (43%) reported low-grade fever, and nineteen (48%) reported myalgias. Two (5%) cases reported bloody stools. Dates of illness onset for cases were October 7 through October 9. Incubation periods ranged from 2.5 to 55 hours, with a median of 32 hours. The duration of illness ranged from 14 to 94 hours, with a median of 43 hours. The stool specimen from a case that was submitted to a health care provider was negative for enteric bacterial pathogens.

All food items served at the wedding reception were commercially prepared and served plated to the guests' tables. The wedding cake was baked by a licensed baker and served by wedding attendants. Standard univariate analysis of data from the case-control study demonstrated that the vegetable salad served at the reception was the only food item statistically associated with illness (38 of 40 cases vs. 40 of 51 controls; odds ratio, 5.2; 95% confidence interval, 1.1 to 25.1; p= 0.03).

On October 12 and 15, WCDPHE environmental health specialists interviewed restaurant management and employees, conducted critical control point analysis of the specific wedding reception foods and inspected the kitchen. No food workers, including management and bar staff, at the restaurant reported illness during the 7 days prior to or following the event.

During the initial follow-up to the foodborne illness complaint, the restaurant's primary handwashing sink was found to be out of order. In reviewing the establishment's most recent inspection report (from April 2001) orders for correction on the nonfunctional sink were issued. Management reported the sink was repaired and functional until the first week of October, following which time the kitchen's food preparation sink was temporarily utilized as a handwashing sink. The only perishable food items served

to wedding guests and prepared in the food preparation sink were fruit; all vegetable ingredients for the salad were purchased pre-washed. Pre-washed cauliflower and broccoli florets were broken apart by hand. Management reported foodhandlers were required to wearing gloves during food preparation. However, foodhandlers were observed preparing ready-to-eat food items without gloves during the inspection. Temporary foodhandlers were employed by the restaurant to prepare several of the food items served at the wedding reception, including the salad.

The clinical features of this outbreak are characteristic of viral gastroenteritis caused by a Norwalk-like calicivirus. The epidemiologic and environmental health findings support viral transmission to wedding guests through the salad, which had been prepared by foodhandlers most probably shedding virus following their unreported or asymptomatic illness. Foodhandlers purportedly wore gloves while preparing and mixing the large volume of salad ingredients. However, foodhandlers were observed preparing ready-to-eat food items without gloves during the inspection. If gloves were utilized by the temporary food service staff, they would have covered hands and wrists. Mixing utensils were not used for tossing the salad. Given the volume of salad, foodhandler forearms would have been immersed in the salad, potentially contaminating it with viral particles.

(33)
Viral Gastroenteritis Associated with a Restaurant

November Steele County

On November 14, the Minnesota Department of Health (MDH) foodborne illness hotline received a complaint from a couple that developed gastrointestinal illness after eating at a restaurant in Owatonna on November 9. On November 20, MDH received a second complaint from a person who had eaten at the restaurant with a friend on November 13; both patrons reported gastrointestinal illness.

An MDH sanitarian was contacted, and an investigation was initiated. The sanitarian visited the restaurant on November 21 to obtain a list of employees, speak with management staff, and evaluate food preparation and handling procedures. A list of names and telephone numbers of food workers was given to an MDH epidemiologist, and interviews were conducted. The sanitarian was not able to get additional names and telephone numbers of restaurant patrons who had eaten at the establishment between November 9 and 13; therefore, no additional patron interviews were done. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected.

Of the four cases from the two complaints that reported illness, three (75%) had diarrhea, three (75%) reported vomiting, four (100%) had cramps, one (25%) reported having a fever, and no one had bloody stools. The median incubation period was 20.5 hours (range, 12 to 33 hours). Food items that the four patrons had in common were chicken and lettuce. Three people ate chicken salads; the fourth person had chicken fajitas, chicken sticks, and a dinner salad.

Five employees interviewed had symptoms that met the case definition. All five (100%) reported vomiting, three (60%) had diarrhea, two (40%) reported cramps, one (20%) reported fever, and no one had bloody stools. The earliest onset date reported was November 7, and the latest was November 13. The other onset dates reported were November 10 and 11. Four (80%) of the five ill employees worked on November 9 and 13, the days the patrons ate at the restaurant. After receiving information from MDH on November 21 regarding the ill food workers, the sanitarian telephoned the manager of the

restaurant to discuss symptoms and illnesses that require exclusion of employees from work. The importance of thorough handwashing by all employees was also discussed.

The epidemiologic and clinical characteristics of these illnesses were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. No specific food vehicle was identified, but salads prepared by ill food workers may have been the cause. The likely source of illness was recently ill food workers who cooked, plated, and/or served food.

(34)

Viral Gastroenteritis Associated with Sub Sandwiches from a Restaurant

November Carver County

On November 26, 2001 the Minnesota Department of Health (MDH) received a complaint from a group of six people who reported gastrointestinal illness after eating a common lunch of submarine sandwiches from a restaurant in Excelsior on November 17. A second complaint was received from a school that reported several cases of gastrointestinal illness after sandwiches from the same establishment were served at a conference held on November 20. The school nurse also identified two independent parties who did not attend the conference but became ill after eating sandwiches from the same restaurant. An investigation was initiated on November 26.

Lists of names and phone numbers of persons in the four parties were obtained. Epidemiologists from MDH interviewed persons from the four parties by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating sandwiches from the restaurant. MDH sanitarians inspected the restaurant on November 26. An MDH sanitarian and MDH epidemiologists interviewed restaurant employees about recent gastrointestinal illness and job duties. No stools were collected from patrons or restaurant employees for testing.

Of the 51 persons interviewed, 22 (40%) met the case definition (six cases of six interviewed from the first party, 12 of 41 from the second party, three of three from the third party and one of one from the fourth party). Five people were excluded from the analysis because they had mild gastrointestinal illness that did not meet the case definition. Twenty (91%) of the 22 cases had diarrhea, 18 (82%) had abdominal cramps, 14 (64%) had vomiting, and seven (37%) of 19 had fever. One person reported visiting a health care provider for their illness. Meal dates were November 17 and November 20. A few people reported eating leftovers on November 21 from the conference the previous day. The median incubation period was 24 hours (range, 24 to 96 hours). The median duration of illness was 43 hours (range, 4 to 153 hours).

Because all those interviewed in three of the four parties were ill, statistical analysis was not conducted for those groups. For the school conference group, eating turkey sandwiches approached statistical significance in association with illness (10/12 cases vs. 11/23 controls; odds ratio, 5.5; 95% confidence interval, 0.83 to 59; p=0.07). The cases from the four groups ate a variety of sandwiches: chicken, turkey, tuna, BLT, ham, and club. Most sandwiches had several toppings including lettuce, tomato, onion, pickles, cheese, and peppers; one sandwich had no toppings.

Thirteen restaurant employees were interviewed. One reported gastrointestinal illness with onset on November 27. None of the employees reported gastrointestinal illness on or before the meal dates of the cases. One employee reported having an ill child at home with onset of gastrointestinal illness on November 17. This person along with one other restaurant employee prepared all the foods served on

November 17 and 20, including the tuna and other salads, the vegetables used as toppings, and the sandwiches.

The inspection of the establishment revealed two critical violations: there was no certified food service manager employed at the establishment and the seafood salad at the front service line was 45° F. According to management, employees are required to wear gloves while making sandwiches. Appropriate use of gloves was observed during the investigation. Handwashing procedures and exclusion of ill workers were discussed with management. A video and other handwashing training materials were given to the establishment to be used in staff training.

The clinical and epidemiologic characteristics of these illnesses were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. Sandwiches from the restaurant were the likely vehicle. No single sandwich type or ingredient in the sandwiches was conclusively identified as the vehicle. No ill foodhandlers were identified with onset on or before the meal dates of the cases; however, one restaurant employee who helped prepare the sandwiches reported an ill child at home at the time of the outbreak. In addition, one ill foodhandler was identified with a later onset, indicating possible disease transmission among workers at the restaurant.

(35)
Calicivirus Gastroenteritis Associated with Coleslaw Served at a Restaurant

November Hennepin County

On November 29, 2001 the Minneapolis Division of Environmental Health (MEH) notified the Minnesota Department of Health (MDH) of a complaint of gastrointestinal illness in four of four persons who had eaten at a restaurant together on November 23. The four persons also had a common exposure at a gathering of 16 people the previous day, but there were no other illnesses among the larger group. Epidemiologists from MDH contacted the four about their illness history and the meal they had eaten at the restaurant. A case was defined as a person who ate at the restaurant on November 23 and subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools within a 24-hour period). Stool samples were collected from two individuals and submitted to MDH for bacterial and viral testing. MEH sanitarians conducted an inspection of the restaurant addressing food preparation procedures, temperature violations, handwashing, and employee illness. MDH epidemiologists assisted in contacting food workers for illness history and work and duty schedule for the week of November 19.

All four individuals met the case definition, and all four reported vomiting, diarrhea, and cramps. The median incubation period was 24.5 hours (range, 20.5-32.5 hours). The median duration of illness was 4.8 days (range, 3.5-5.2 days). All four persons ate spare ribs, potato, toast, and coleslaw. The two stool samples tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*; one of the two stool samples tested positive for calicivirus.

There were no reports of recently ill employees in the restaurant's employee log or among the 16 of 20 employees who were interviewed. MEH sanitarians discovered critical foodhandling violations in the preparation of the coleslaw including bare-hand and arm contact during preparation and inadequate cleaning and sanitizing of the barrel and wand between batches.

An outbreak of calicivirus gastroenteritis occurred among patrons of a Minneapolis restaurant. The most plausible cause of the outbreak was contamination of the coleslaw by an infected food worker, but this was not confirmed. MEH sanitarians required the restaurant to submit a handwashing policy and a

HACCP plan for the coleslaw to address critical points and to minimize hand contact. All policies were to be translated into Spanish.

(36)
Calicivirus Gastroenteritis Associated with a Restaurant

November Hennepin County

On December 6, 2001 the Hennepin County Community Health Department (HCCHD) and City of Minnetonka Community Development Department were notified by the Minnesota Department of Health (MDH) of independent complaints from two groups of people who reported gastrointestinal illness after eating at a restaurant in Minnetonka on December 1. An investigation was initiated on December 6.

Epidemiologists from MDH interviewed persons from the two parties by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. City of Minnetonka environmental health specialists inspected the restaurant on December 6. City of Minnetonka environmental health specialists and an MDH epidemiologist interviewed restaurant employees about recent gastrointestinal illness, job duties, and work schedule. Employees who were experiencing gastrointestinal symptoms or who had recently been ill were asked to submit stool specimens for testing. A HCCHD epidemiologist summarized the data from interviews of patrons and restaurant employees. No information was available on other persons who ate at the restaurant on December 1.

Eight of nine individuals in the two parties reported gastrointestinal symptoms (three of three in one party and five of six in the other). Of the eight individuals that reported being ill, two were excluded from the analysis because they had mild gastrointestinal illness that did not meet the case definition. All six cases (100%) reported having diarrhea, five (83%) reported vomiting, one of four cases (25%) reported fever, and one of four (25%) reported bloody stools. The median incubation period was 35 hours (range, 23 to 56 hours). The median duration of illness was 33 hours (range, 27 to 45 hours). No stools were collected from patrons for testing. The patrons ate a wide variety of foods and drinks at the restaurant, such as shrimp eggrolls, wontons, potstickers, white rice, fried rice, chicken dishes, noodles, ginger ale, beer, and iced tea.

The restaurant did not maintain an employee illness log. Although the manager reported being unaware of any employee being ill with gastrointestinal symptoms, interviews of restaurant employees revealed that many employees reported recent gastrointestinal illness. Sixty-five employees (100%) were interviewed, and 13 (20%) met the case definition. Nine were servers, two were hosts, one was a bartender, and one was a manager. Eleven of 13 (85%) had vomiting, eight of 13 (61%) had diarrhea, six of 13 (46%) had cramps, three of 13 (23%) had fever, three of 13 (23%) had nausea, and one (8%) had bloody stools. Dates of illness onset ranged from November 28 to December 5. Illness duration was less than 48 hours in the majority of cases. No one sought medical care. Four employees submitted stool samples for testing. All four were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Three of the four specimens were positive for calicivirus.

Inspection of the restaurant detected four critical violations in the areas of food temperature, sanitization, handwashing, and self-inspection program utilization. A handwashing training video was given to the establishment to be used in staff training. The restaurant reported serving 980 meals on December 1, and received no other complaints.

This was an outbreak of calicivirus gastroenteritis at a restaurant in Minnetonka. No single food item was identified as the vehicle. A number of restaurant employees reported gastrointestinal illness and tested positive for calicivirus with onsets prior to and after the patrons' exposure date. This indicates that transmission occurred among restaurant employees, and from employees to patrons, most likely due to hand contact of infected employees with ready-to-eat food.

(37)
Gastroenteritis Associated with a Meeting Catered by a Hotel

December Ramsey County

On December 4, 2001 the Minnesota Department of Health (MDH) received a foodborne illness complaint from a group of five nurses who had attended a banquet at a hotel in St. Paul on December 3. The nurses, who were all from the same clinic, reported that they did not have other recent common meals.

A sanitarian from the City of Saint Paul was contacted, and an investigation was initiated. The sanitarian visited the hotel on December 5 to speak with management staff and evaluate food preparation and handling procedures. On December 6 the sanitarian collected food samples that were left over from the December 3 meal. Food items brought to MDH for testing were: the roulade of chicken; romaine lettuce from the house salad; the lemon caper vinaigrette from the house salad; the buttermilk peppercorn vegetable dip; and the cucumber remoulade. Food testing methods used by the MDH Public Health Microbiology Laboratory were based on procedures described in the *Compendium of Methods for the Microbiological Examination of Foods*, 4th Ed., 2001. Food samples were tested for *Clostridium perfringens, Staphylococcus aureus,* and *Bacillus cereus*. Testing for the diarrheal toxin of *B. cereus* employed the Oxoid BCET-RPLA test kit, which is manufactured by Denka Seiken Limited in Japan.

MDH contacted the event sponsor to get the names of the banquet attendees, and a total of 35 people from eight clinics were interviewed. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the banquet. MDH collected stool samples from four ill banquet attendees.

Ten people (29%) met the case definition. Of the 10 cases, nine (90%) had diarrhea, two (20%) had vomiting, eight (80%) had cramps, and no one had fever. The median incubation period was 3.75 hours (range, 1.5 to 18 hours). The median duration of illness was 11 hours (range, 3 to 51 hours). The four stool samples tested negative for *Campylobacter, E. coli* 0157:H7, enterotoxigenic *E. coli* (ETEC)*, Salmonella, Shigella, Bacillus cereus, Staphylococcus aureus, Clostridium perfringens,* and calicivirus.

Consumption of raw vegetables and consumption of raw carrots both showed statistically significant associations with illness in univariate analysis. Only consumption of raw carrots was significant in multivariate analysis (6/8 cases vs. 5/21 controls; odds ratio, 9.6; 95% confidence interval, 1.5 to 63.5; p=0.011).

Food testing results are summarized in the following table:

Food	Agent isolated from food	CFU/gram of food	*B. cereus* toxin testing on culture filtrate	*B. cereus* toxin testing on food extract
Hearts of romaine	None found	Not applicable	Not applicable	Not done
Parma chicken	None found	Not applicable	Not applicable	Not done
Vegetable dip	None found	Not applicable	Not applicable	Not done
Buttermilk dip	*B. cereus*	800	Positive	Negative
Lemon caper	*B. cereus*	700	Positive	Negative

This was an outbreak of gastrointestinal illness associated with a banquet. The incubations and symptoms are consistent with a bacterial intoxication. *Bacillus cereus* was the most likely causative agent. Potential food vehicles included the buttermilk peppercorn dip, the lemon caper vinaigrette, and the raw carrots. Of these, the buttermilk peppercorn dip was the most likely vehicle, as it would have been eaten with raw carrots, a statistically implicated food item. Colony counts of *B. cereus* obtained from positive foods were below levels considered to be capable of causing disease. However, these foods were held for 3 days before they were collected, and food characteristics (e.g. a low pH) may have reduced *B. cereus* numbers from the time of the meal to the time of food testing. The median incubation of 3.75 hours would be an unusual manifestation of the diarrheal type of *B. cereus.* It is likely that the stool samples were negative for *B. cereus* because they were collected 2 days after the banquet attendees had been ill. Another confirmed outbreak of foodborne intoxications due to the diarrheal type of *B. cereus* with an uncharacteristically short incubation was observed in 2001 in Minnesota; MDH is currently evaluating the possibility of previously unreported toxins in *B. cereus* or other explanations for *B. cereus* outbreaks with short incubations.

(38)
Viral Gastroenteritis Associated with the Fresh Vegetable Tray at a Holiday Party

December Kanabec County

On December 13, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a report that several people were ill after attending a company holiday party held on Saturday, December 8 at a restaurant in Mora. The initial report was that about 25 of the approximately 50 attendees were ill with gastrointestinal symptoms. An investigation was initiated in collaboration with a sanitarian from the MDH St. Cloud District office.

The restaurant provided a list of all food items served at the party. A list of party attendees and their phone numbers was obtained from the company. Attendees were interviewed by MDH epidemiologists about food and beverage consumption and illness history. Attendees were also asked if they had any gastrointestinal illness in their households during the week prior to the holiday party. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after attending the party. Stool collection kits were sent to the households of four cases. Two cases returned kits to MDH for bacterial and viral testing.

On Thursday, December 13 the sanitarian contacted the restaurant by phone to obtain information. At that point the manager denied any recently ill workers, except for one worker that became ill on Tuesday, December 11. The restaurant was asked by the sanitarian to discard any open, ready-to-eat food items. A list of food workers and their phone numbers was obtained from the restaurant manager,

and food workers were contacted by the epidemiologist to ascertain a history of recent gastrointestinal illness as well as job duties. Lists of other groups that had recently held events at the facility also were obtained from the restaurant manager. Contact persons from each event were called to determine if there was any illness in those groups.

Forty-one party attendees were interviewed; 18 (44%) met the case definition, 20 (49%) reported no symptoms, and three (7%) had symptoms that did not meet the case definition and were excluded from further analysis. Sixteen cases (89%) had diarrhea and cramps, nine (50%) had vomiting, four (22%) reported fever, and no one reported bloody stools. No one was hospitalized. The median incubation was 37 hours (range, 15 to 86 hours), and the median duration of illness among those who were recovered at the time of interview was 31 hours (range, 10 to 53 hours).

Food items available at the party included a salad bar, roast pork, roast beef, baked chicken, cooked California medley vegetables, mashed potatoes and gravy, dinner rolls, a meat and cheese tray, a fresh veggie tray, and apple crisp. All items were prepared by the restaurant kitchen, with the exception of the apple crisp, which was purchased from a different restaurant. By multivariate stepwise logistic regression analysis, consuming an item from the fresh veggie tray (15 of 18 [83%] cases vs. 5 of 20 [25%] controls; odds ratio, 15.0; 95% confidence interval, 3.0 - 74.3; $p < 0.001$) was the only exposure significantly associated with illness.

Both stool samples tested by MDH were negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, and calicivirus; however, both samples were collected at least 9 days after illness onset.

For the party, at least two food workers prepared the salad bar, and a third worker prepared the other items, including the hot entrees, cooked California medley vegetables, mashed potatoes and gravy, dinner rolls, meat and cheese tray, and fresh veggie tray. The fresh veggie tray consisted of pre-cut broccoli, cauliflower, baby carrots, and pickles purchased from a national distributor. The veggies were rinsed with water and then placed on the serving tray by a food worker using bare hands and no gloves or utensils. This food worker denied any recent gastrointestinal illness and also denied any recent gastrointestinal illness in household members.

All but one of the other restaurant employees interviewed denied having any gastrointestinal illness or any ill household members in the past weeks. One restaurant employee, a bartender, had become ill with diarrhea on Tuesday, December 11, 3 days after the party. This individual had not worked on the day of the party, nor had this individual prepared any items that were served at the party. A household member of this food worker had been ill with diarrhea on Wednesday, December 5.

On Friday, December 14, the sanitarian inspected the restaurant. No concerns were identified. No other illness was identified in attendees of four other events held at the restaurant around the same time period; however, the implicated food item was not served at any of the other events.

This outbreak associated with a holiday party was characteristic of viral gastroenteritis caused by a Norwalk-like calicivirus. Eating an item from the fresh veggie tray was associated with illness. The food worker responsible for preparing the tray denied any recent gastrointestinal illness and also denied having any recently ill household members. The source of viral contamination of the veggie tray was not identified.

(39)
Shigella sonnei Infections Associated with an Elementary School

December Becker County

On Monday December 17, 2001 the Park Rapids School District nurse notified the Minnesota Department of Health (MDH) Northwestern District field epidemiologist of an unusual number of student absences at an elementary School in Becker County. Twenty-five of 78 students in grades K-4 were absent; parents reported diarrhea, vomiting, and fever in the children.

A roster of students and the school's lunch menu from the previous week were obtained from the school. Epidemiologists from MDH contacted students about the meals they had eaten at the school from December 10 to 14, group activities outside school, their illness history, and any sick household members. A case was defined as a student or staff member at the elementary school with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) on or after December 3. Stool samples were collected from six ill students and tested for *Campylobacter,* enteropathogenic *E. coli* spp*., Salmonella*, *Shigella, Yersinia,* and calicivirus.

The MDH West Central district sanitarian inspected the school kitchen and cafeteria on December 18, addressing food preparation procedures, hot and cold holding temperatures, serving procedures, handwashing, and employee illness. Three water samples were collected and tested for coliform bacteria. The MDH field epidemiologist assisted with collecting illness histories and stool samples from the five teachers and three cooks, none of whom reported symptoms.

Fifty-seven of 78 students and seven school staff were interviewed; 30 students (53%) met the case definition. Of the 30 cases, all reported diarrhea (including two with bloody diarrhea), 24 (80%) reported fever, and 21 (70%) reported vomiting. Dates of illness onset ranged from December 5 to December 19; 21 cases (70%) became ill from December 14 to 16. The median duration of illness of 11 cases was 26 hours (range, 18 to 84 hours), but 19 cases had ongoing symptoms of 3 to 4 days at the time of the interview, so the true duration of illness was greater.

Attack rates of illness in the school varied between grade levels: six (50%) of 12 kindergarteners interviewed, nine (100%) of nine first graders, 10 (77%) of 13 second graders, one (11%) of nine third graders, and four (33%) of 12 fourth graders interviewed. None of the teachers, cooks or other school staff reported gastrointestinal illness.

Shigella sonnei pulsed-field gel electrophoresis subtype SS1 was isolated from stool samples of 10 students and seven adults (including one teacher and six parents or grandparents of ill children). Other bacterial and viral enteric pathogens were not identified in the samples. On December 21 a letter was sent to student's homes explaining the cause of the outbreak, the routes of transmission of *Shigella*, and recommending that symptomatic persons see their doctor for antibiotic therapy. Community health service agencies in Hubbard and Becker Counties were notified of the outbreak and local health care providers were faxed the antibiotic drug susceptibility profile of the organism.

There were no significant group activities outside school reported by affected students. Having a household member with a previous diarrheal illness was associated with illness; fourteen (70%) of 20 students with ill household members reported symptoms, compared to sixteen (39%) of 41 students without ill household members (relative risk [RR], 1.8; 95% confidence interval [CI], 1.1- 2.9; p= 0.05).

Univariate analysis of food items was restricted to students with illness onset dates from December 13 to December 17. Consumption of food items served on several different days was associated with illness: corndogs on December 10 (21 [58%] of 36 exposed vs. 4 [22%)] of 18 unexposed; RR, 2.6; 95% CI, 1.1-6.5; p= 0.01), strawberry shortcake on December 12 (19 [61%] of 31 exposed vs. 6 [27%] of 22 unexposed; RR, 2.3; 95% CI, 1.1-4.7; p = 0.01), and tartar sauce used with shrimp poppers on December 13 (15 [63%] of 24 exposed vs. 8 [29%] of 28 unexposed; RR, 2.2; 95% CI, 1.1-4.2; p = 0.01). Multivariate analysis of food items and eating lunch on each day from December 10 to December 14 (using stepwise logistic regression) did not identify any exposures independently associated with illness.

The MDH West Central district sanitarian performed a thorough inspection of the school kitchen and cafeteria. Foodhandling procedures, hot and cold holding temperatures, and cleaning procedures were in compliance with food codes. The majority of food items were handled by kitchen staff wearing disposable gloves. Most of the menu items also were served at other Park Rapids district schools. There were items that could potentially be contaminated by hands (but were not violations of food code), such as ketchup and tartar sauce in self-serve containers on the condiment table. Students were observed to handle several milk cartons to read the jokes on the side before choosing one.

Water samples from the school tested negative for coliform bacteria. The two central bathrooms had adequate handwashing facilities with soap and single serve paper towels. The third grade classroom was the only one with a bathroom within it, and this allowed the teacher to monitor handwashing in her students.

This was a foodborne outbreak of *Shigella sonnei* among children at an elementary school amidst a continuing person-to-person outbreak in the surrounding community. A plausible explanation for the large number of cases in the students on December 14-16 was transmission in the cafeteria through food dispensers contaminated by student's hands, such as ketchup for the corndogs, and tartar sauce for the shrimp poppers. The low attack rate among third graders may have been due to monitored handwashing in that group.

A final site visit by MDH West Central district sanitarians occurred on January 3, 2002. All self-serve items had been discontinued including self-serving of milk, and handwashing was emphasized and monitored among all the grade levels.

PROBABLE FOODBORNE OUTBREAKS

(1)
Gastroenteritis Associated with a Restaurant

January Hennepin County

On January 11, 2001 the Minnesota Department of Health (MDH) was contacted by a City of St. Louis Park sanitarian regarding a group of 11 coworkers from the City of St. Louis Park who had lunch together at a restaurant in Golden Valley on January 10. The initial report was that four of the 11 coworkers had become ill with gastrointestinal symptoms. They denied having any other meals in common.

A list of the coworkers and their phone numbers was obtained from the original complainant. Epidemiologists from MDH interviewed attendees by phone about food consumption and illness history. A case was defined as any person who ate at the restaurant and subsequently developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). No stool samples were collected. A sanitarian from the City of Golden Valley visited the restaurant on January 12.

Seven of the 11 coworkers were interviewed. Four (57%) met the case definition and three (43%) reported no symptoms. All four (100%) reported diarrhea and cramps, one (25%) reported vomiting, and no one reported fever or bloody stools. The median incubation was 2.5 hours (range, 2 to 25 hours). The median duration of illness was 18 hours (range, 11 to 46 hours). Food items consumed by the coworkers included hibachi chicken rice, teriyaki beef julienne, hibachi vegetables (zucchini, onions, mushrooms), sauces, salad, and steamed rice. No food items were statistically associated with illness. The inspection of the restaurant by the City of Golden Valley sanitarian was unremarkable.

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

(2)
Gastroenteritis Associated with a Restaurant

January Hennepin County

On January 17, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received a report of illness among two people who had dined together at a restaurant in Bloomington on January 16. That same day, City of Bloomington Environmental Health (CBEH) received a foodborne illness report from another person who had also eaten at the restaurant on January 16. CBEH initiated an investigation of the restaurant.

Restaurant management provided CBEH staff with a reservation list from January 16. CBEH staff contacted and interviewed patrons about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) plus one other symptom after eating at the restaurant. Two cases submitted stool samples to MDH for bacterial, bacterial toxin, and viral testing.

CBEH sanitarians conducted an environmental health inspection of the establishment on January 17 and 18 inspected the restaurant with emphasis placed on critical food safety and flow-of-food issues for menu items.

Twenty-five people from eight separate dining parties were interviewed. Five (20%) met the case definition. Meal times ranged from 11:30 A.M. to 6:00 P.M. on January 16. The five cases were from four separate groups. All five cases reported nausea, four (80%) had abdominal pain, three (60%) had vomiting, three (60%) had diarrhea, one (20%) had fever, and one (20%) had chills. One case sought medical attention for their illness. The median incubation was 5.5 hours (range, 4 to 29 hours) and the median illness duration was 8 hours (range, 5.5 to 20.5 hours).

One of the two stool specimens tested was positive for *Clostridium perfringens* enterotoxin A; this case's incubation was 9 hours. The other stool specimen was positive for calicivirus; this case's incubation was 5 hours.

Mussels, as an ingredient in different menu items consumed by patrons, was the only food item statistically associated with illness (2 of 5 cases vs. 0 of 19 controls; odds ratio, undefined; $p = 0.04$). However, this food item only accounted for 2 of the 5 cases.

Two critical food safety violations were detected during the environmental health investigation. Serving staff failed to minimize direct hand-food contact with bread while cutting and plating it for service. In the kitchen, a foodhandler had prepared oysters on the half shell on a cutting board, and then proceeded to cut goat cheese on the same cutting board without stopping to properly clean or sanitize the cutting board between uses.

This was a probable outbreak of gastroenteritis associated with a restaurant. The clinical and epidemiologic characteristics of these illnesses failed to strongly support a single pathogen, source, or vehicle. One case had a stool positive for *Clostridium perfringens* enterotoxin A, and another case had a stool positive for calicivirus. The case that had a positive calicivirus result became ill just 5 hours after eating at the restaurant, therefore, it is unlikely that she contracted calicivirus at the restaurant.

(3)
Gastroenteritis Associated with a Restaurant

February Ramsey County

On February 14, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of gastrointestinal illness among three co-workers who ate together at a restaurant in St. Paul on February 13. The co-workers denied any other common exposures.

A sanitarian from the City of St. Paul obtained a list of other patrons who ate at the restaurant on February 13. MDH epidemiologists interviewed the ill co-workers from the initial complaint and the other restaurant patrons about food consumption and illness history. The City of St. Paul conducted a full inspection of the restaurant and inquired about any additional complaints the restaurant may have received. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. Two stool samples were collected from ill patrons and submitted to MDH for testing.

Eleven patrons were interviewed, and three (27%) met the case definition. Two (18%) cases reported diarrhea, two (18%) reported cramps and one (9%) reported vomiting. Onset of illness occurred on February 13. The median incubation period was 3 hours (range, 1 to 3 hours). The median duration of illness could not be calculated because two of the three cases had ongoing illness at the time of the interview. Eating white rice was marginally associated with illness (2 of 3 cases vs. 0 of 8 controls; odds ratio, undefined; $p < 0.06$).

The restaurant manager reported that the restaurant received no other complaints from ill patrons. In addition, the sanitarian did not identify any problems at the restaurant during the inspection. The rice was held in the steam table at the correct temperature.

The stool samples tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, calicivirus, *Bacillus cereus*, and *Staphylococcus aureus*. However, *Clostridium perfringens* was isolated from one of the stool samples.

This was a probable outbreak of gastroenteritis associated with a restaurant. The source of these illnesses may have been the white rice. The combination of the median incubation period and signs and symptoms was compatible with a bacterial toxin-mediated gastroenteritis. The median incubation period was too short to be consistent with the restaurant as the source of *Clostridium perfringens*. Therefore, the identification of this bacteria may have been unrelated to the restaurant. It is possible that the illnesses were due to person-to-person transmission or to an undetermined common exposure prior to the meal at the restaurant.

(4)
Gastroenteritis Associated with a Funeral Luncheon

February Washington County

On February 27, 2001 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a funeral luncheon a church in White Bear Lake on February 21.

Funeral attendees and volunteers who served and consumed food at the church were interviewed by MDH epidemiologists about food consumption and illness history. Another group of volunteers, who did not eat at the luncheon but prepared food for the event, was interviewed about recent illness in their households and the food items they purchased or prepared for the funeral. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after attending the funeral.

Nineteen (73%) of 26 attendees and volunteers who served and consumed food were interviewed, and seven (37%) met the case definition. All seven (100%) cases reported diarrhea, three (43%) reported fever, two (29%) reported cramps, and two (29%) reported vomiting. Dates of illness onset were February 22 and 23. The incubation period ranged from 16 to 51 hours, with a median of 29 hours. Duration of illness was 24 to 90 hours, with a median of 49 hours. One stool sample was collected during a case's hospital stay. The stool sample tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella.* The stool sample was not tested for calicivirus.

Ten (91%) of 11 volunteers who prepared food were interviewed. None of the volunteers reported any signs of illness in themselves or in family members during the week prior to or following the funeral luncheon. None of the food items served at the funeral were statistically associated with illness.

This was a probable outbreak of gastroenteritis associated with a funeral luncheon. The etiologic agent and vehicle could not be identified. None of the volunteers from the church who served or prepared food for the luncheon reported illness before or during the time the event took place. No particular food items were associated with illness among the attendees, so person-to-person transmission could not be ruled out.

(5)
Viral Gastroenteritis Associated with a Restaurant

March Hennepin County

On March 8, 2001 the City of Wayzata sanitarian faxed a foodborne illness complaint to the Minnesota Department of Health (MDH). Three men who were coworkers had reported becoming ill with gastrointestinal symptoms after eating sandwiches from a restaurant in Wayzata on March 2. On March 7, MDH had received a faxed foodborne illness complaint from the Hennepin County Community Health Department; according to that person's 4-day food history, he had eaten pizza from the restaurant on March 3. An investigation was initiated with the City of Wayzata.

Complainants were interviewed by the City of Wayzata sanitarian and MDH epidemiologists about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected. The sanitarian inspected the restaurant and obtained a roster of employees to interview about job duties and any recent gastrointestinal illnesses.

The three coworkers who ate takeout food from the restaurant on March 2 each became ill approximately 36 hours after eating sandwiches (chicken salad, ham, and club, respectively). All three had vomiting, and two of the three also had diarrhea. One person was ill for approximately 3 days and another was ill for 1 day. The third person did not report a duration of illness. Two of the three coworkers had at least one other recent meal in common.

The man who had eaten pizza from the restaurant on the evening of March 3 became ill approximately 40 hours later with vomiting, diarrhea, and cramps. His duration of illness was 30 hours. He had eaten the pizza with his family members, but no one else was ill.

Fourteen employees of the restaurant were interviewed about job duties, recent illnesses, and any recent illness in their households. Approximately five employees who had worked during the week in question were not interviewed; four could not be reached by phone after numerous attempts, and one refused the interview. All 14 workers interviewed denied any recent gastrointestinal illness in themselves or in their households; the restaurant owner reported having a fever and cold symptoms during the week before the patron illnesses.

The sanitarian observed poor handwashing practices and potential for cross-contamination at the restaurant. The restaurant had no reservation list, and no checks or credit card receipts were available, so no additional patrons could be identified through these means.

This was a probable outbreak associated with a restaurant. The symptoms and incubation periods reported by the complainants fit the profile for viral gastroenteritis caused by a Norwalk-like calicivirus. Temporally clustered complaints by two unrelated parties involving the same restaurant suggests that this may have been a foodborne outbreak. However, a definite epidemiologic association between the restaurant and the illnesses could not be confirmed with the number of cases identified.

(6)
Viral Gastroenteritis Associated with a Restaurant

March Dakota County

On Monday, March 12, 2001 the Minnesota Department of Health (MDH) received a foodborne illness complaint from three people who became ill after sharing a common meal at a restaurant in Burnsville on Friday, March 2. The three people were from two different households and denied they had any other meals in common.

Epidemiologists from MDH interviewed the restaurant patrons by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. Two MDH sanitarians visited the restaurant on March 13 to determine if there were any ill food workers, speak with management staff, and investigate food preparation and handling procedures. Foodhandlers that were involved in food preparation on March 2 were interviewed to determine illness history for themselves and family members. Due to the delay between the illnesses and notification of the health department, no stool samples were collected.

All three people from the complaint were interviewed, and all met the case definition. All three (100%) had vomiting, cramps, and fever; two (67%) had diarrhea; and no one reported bloody stools. No one sought medical attention. The incubation periods were 36 hours, 41.5 hours, and 41.5 hours, respectively. Each of the cases ate a different hot entree, but all three had bread, cake, and beverages with ice.

Nine food workers were interviewed by sanitarians, and eight denied experiencing any recent gastrointestinal illness or ill household members. One server who had worked on the evening of March 2 reported onset of vomiting and diarrhea on March 4. This server's foodhandling activities were limited to plating food items, including bread.

Evaluation of the restaurant by sanitarians found some critical foodhandling violations, including a lack of handwashing by dishwashing staff, cold holding temperature violations, no measurable sanitizer in the dishwashing machine, and a broken handwashing sink in the kitchen area. Recommendations were made to correct these violations, and a follow-up inspection conducted on March 21 verified correction of the violations.

This was a probable outbreak associated with a restaurant. The clinical and epidemiologic characteristics of these illnesses were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. An ill food worker was identified at the restaurant, but the worker's onset of illness was simultaneous with the patrons' onset. Due to the small number of cases, a vehicle could not be identified.

(7)
Campylobacteriosis Associated with Chicken Salad Served at a Restaurant

March Olmsted County

In April-May 2001, as part of routine active laboratory-based surveillance activities, the Minnesota Department of Health (MDH) interviewed two individuals with culture-confirmed *Campylobacter jejuni* infections that both reported eating Aztec chicken salad at a restaurant in Rochester two days before their respective illness onsets. Olmsted County Public Health Services (OCPHS) was notified and conducted an investigation. MDH epidemiologists interviewed the *Campylobacter* cases by phone about food consumption and illness history. OCPHS sanitarians visited the restaurant in June and assessed the preparation of the Aztec chicken salad in order to identify and correct any possible hazards.

The first case of *Campylobacter jejuni* infection was a resident of Fillmore County who ate Aztec chicken salad at the restaurant on the evening of March 16. She became ill with diarrhea, bloody stools, cramps, fever, headache, nausea, and chills on March 18, approximate 46 hours after the meal. The case was not hospitalized; she was treated with ciprofloxacin and recovered after 6 days of symptoms. She reported that her boyfriend, who also ate at the restaurant, also became ill; his food history was not obtained. The second case was a resident of Stearns County who ate Aztec chicken salad at the restaurant around March 23. He became ill with diarrhea, nausea, and fatigue on March 25, approximately 48 hours after the meal. The case was not hospitalized; he was treated with ciprofloxacin and then with erythromycin. The case reported experiencing diarrhea for over a month.

On June 12, an OCPHS sanitarian visited the restaurant and performed a food flow analysis on the Aztec chicken salad. The chicken was purchased from a large national distributor and arrived at the restaurant pre-cut and pre-cooked. No direct hand contact with the chicken was observed. The ingredients of the salad were chicken, salad greens, veggie mix, fried tortilla strips, and dressing. The sanitarian did not observe any obvious problems in the preparation of the salad. The sanitarian also reviewed cross-contamination prevention procedures. Dirty towels used for cleaning food preparation surfaces were observed on counters next to utensils; the sanitarian recommended that the towels be put away to avoid cross-contamination.

This was a probable outbreak of *Campylobacter jejuni* infections associated with chicken salad. It is possible that cross-contamination of raw chicken with ready-to-eat items occurred. A definite epidemiologic association between the two *Campylobacter* cases and the salad could not be confirmed.

(8)
Viral Gastroenteritis Associated with a Baptismal Luncheon

March Dakota County

On March 29, 2001 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among persons who attended a baptismal luncheon at a private home in Hastings on March 25. The luncheon hostess provided a list of 30 guests who attended the event. MDH epidemiologists interviewed guests about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). No stool samples were collected for testing.

The hostess also provided a list of foods served and where the foods were purchased or prepared. A Minnesota Department of Agriculture (MDA) compliance officer inspected the grocery store deli where the deli meat served at the luncheon was purchased. During the inspection, the compliance officer reviewed employee illness logs for March 19 to March 24, reviewed food preparation procedures, and asked if other complaints were received by the deli.

Twenty-eight (93%) of 30 attendees were interviewed. Two persons were excluded from the analysis because they reported onset of gastrointestinal illness 2 days prior to the event. Of the remaining 26 persons, 20 (77%) met the case definition. Sixteen (80%) cases reported diarrhea, 16 (80%) reported vomiting, three (15%) reported abdominal cramps, one (5%) reported bloody stools, and one (5%) reported fever. The incubation period ranged from 10 to 101 hours, with a median of 31 hours. Duration of illness was 10 to 87 hours, with a median of 32 hours.

Foods served included ham, turkey, black-peppered turkey, roast beef, corned beef, and hard salami purchased at a grocery store deli; mozzarella and American cheese, Kaiser and French rolls, lettuce, tomatoes, red onions, pickles, chips, a veggie tray with garden onions, celery, carrots, radishes, black and green olives, and dip; chili, crackers, a store-bought ice cream cake; and potato salad prepared by a family member. The hostess placed the meats on a tray and prepared the chili. Statistical analysis did not show an association of illness with any food item.

The family member who prepared the potato salad had been ill with vomiting and diarrhea on March 23 and 24 with symptoms recurring on the March 27. The hostess had an ill child at home who had onset of vomiting on March 23. The child had an episode of vomiting at the luncheon.

The inspection of the deli where the meats were purchased did not reveal any problems. None of the workers reported illness in the 5 days prior to the event, they did not receive any other complaints from customers, and the workers wore gloves when slicing meats or preparing foods.

This was a probable outbreak associated with a baptismal luncheon in a private home. The epidemiologic characteristics of the illnesses were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. Possible sources include a child who was ill with vomiting before and during the luncheon, and/or a family member who prepared the potato salad for the event.

(9)
Viral Gastroenteritis Associated with a Restaurant

April Hennepin County

On April 16, 2001 the Minnesota Department of Health (MDH) was notified though the foodborne illness hotline of an outbreak of gastrointestinal illness among persons from two different households who ate together at a restaurant in Plymouth on April 6. The persons denied any other common exposures with members of the other households prior to illness. The complaint was faxed to the Hennepin County Community Health Department (HCCHD). Complainants 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 ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected.

A total of five persons had eaten together at the restaurant on April 6. Two of the five (40%) were ill. One person ate a salad with ranch and French dressing; 43 hours later, he had onset of vomiting,

diarrhea, and cramps lasting for 19 hours. The other ill person lived in a different household and denied having any meals in common with the other person. She ate a chef salad with ranch dressing, a roll, and ice water; 41 hours later, she had onset of vomiting, diarrhea, and cramps lasting for 20 hours. The other three people in the dining party reportedly did not eat salad and were not ill; these people were not interviewed directly.

An sanitarian from HCCHD contacted the restaurant on April 16. The manager reported that no food workers were ill and that the restaurant had not received any complaints. Individual food workers were not interviewed about recent illness.

This was a probable outbreak associated with a restaurant. The symptoms, incubation periods, and durations of illness of these two cases were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. Due to the small number of cases and lack of additional information, this could not be confirmed as a foodborne outbreak.

(10)
Viral Gastroenteritis Associated with a Grocery Store Deli

April Hennepin County

During the week of April 23, 2001 the Minnesota Department of Health (MDH) foodborne illness hotline received two separate complaints. Although each caller said they suspected that a different food source was the cause of their illness, in their 4-day food history both callers reported eating food from a grocery store deli in Edina on Saturday, April 21. In both cases, the callers were the only ones in their households that had eaten the food, and they reported no other ill persons. Both complaints were faxed to the Minnesota Department of Agriculture (MDA) Dairy and Food Inspection Division.

Epidemiologists from MDH interviewed both complainants by phone about food consumption and illness history. A case was defined as any person who ate food purchased at the deli and subsequently developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). No stool samples were collected. On April 30, an MDA inspector visited the deli to investigate the complaints.

Both complainants met the case definition. The first case purchased a tabouli salad made of lettuce, olives, beans, vinegar dressing, and sunflower seeds at the deli at about 4:00 P.M. on April 21; the case had onset of vomiting, diarrhea, and cramps 30 hours after eating. The second case ate lasagna and a California roll purchased at the same deli at about 8:00 P.M. on April 21; this case had onset of vomiting, diarrhea and cramps 25 hours after eating. Both were still ill at the time they contacted MDH, so their duration of illness was not determined.

The MDA inspector evaluated the preparation and handling of the tabouli salad product at the deli and did not identify any problems. The deli denied receiving any other illness complaints. The inspector reviewed complaint reporting and hand washing protocols with the deli manager. Deli employees were not interviewed about recent illness in themselves or their households.

This was a probable outbreak associated with a grocery store deli. The symptoms and incubation periods reported by the two complainants fit the profile for viral gastroenteritis caused by a Norwalk-like calicivirus. Complaints by two unrelated parties involving food purchased on the same date from the same grocery store deli suggests that this may have been a foodborne outbreak associated with the

deli food. However, a definite epidemiologic association between the deli food and the illnesses could not be confirmed with the number of cases identified.

(11)
Gastroenteritis Associated with a Restaurant

May Kandiyohi County

On May 16, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of gastrointestinal illness in two individuals who ate together at a restaurant in Willmar on May 15. The individuals denied any other common exposures. A sanitarian from Kandiyohi County Public Health went to the restaurant to conduct an inspection on May 18. The restaurant manager reported that the restaurant had not received any other complaints. In addition, the manager reported that none of the employees had been ill in the few days prior to the complainants' meal date. The restaurant was unable to provide a list of restaurant patrons to MDH. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected from the ill patrons.

Two patrons were interviewed, and both met the case definition. Both cases reported diarrhea and cramps. Onset of illness occurred on May 16. The incubation periods for the two cases were 13 and 16 hours. The duration of illness was 16 hours for the one patron who had recovered at the time of the interview. Although no stool samples were collected, the cases' incubation periods and symptoms were characteristic of *Clostridium perfringens* food intoxication. Both patrons reported eating chips and salsa, beans, and enchiladas (beef and chicken) with cheese, lettuce, and tomato.

At the time of the restaurant inspection, the facility was neat and orderly. The hand-washing sink was properly equipped and accessible, and the mechanical dish system was operating properly.
The walk-in refrigerator was holding the products at 37°F. The beans were prepared on a daily basis and kept in a warm holding cabinet or on a steam table. The holding unit was set at 140°F, and the product inside registered between 123°F and 141°F. The beans on the steam table registered at 130°F. According to Minnesota Rule 4626.0395, the beans were being held at an inadequate temperature.

This was a probable outbreak associated with a restaurant. Based on the patrons' incubation periods, symptoms, and meals, *Clostridium perfringens* may have been the agent that caused their illnesses. During a restaurant inspection conducted three days after the complainants' meal date, the beans were being held at an inadequate temperature. Therefore it is possible that the beans, or other hot foods, could have been held at an inadequate temperature on the complainants' meal date, thereby causing their illness.

(12)
Gastroenteritis Associated with a Restaurant

June Ramsey County

During June 2001, the Minnesota Department of Health (MDH) received four separate foodborne illness complaints from people who had all recently dined at a restaurant in Roseville. The four meal dates were June 14, June 16, June 17, and June 23. Two of the complaints were taken by a sanitarian from St. Paul-Ramsey County Department of Public Health (SPRCDPH) on June 15 and June 18, respectively, and faxed to MDH on June 19. The other two complaints were taken directly by MDH on June 25.

Epidemiologists from MDH interviewed complainants by phone about food consumption and illness history. A case was defined as any person who developed vomiting or diarrhea (≥3 loose stools in a 24-hour period) subsequent to eating at the restaurant. One stool sample was collected from a case and sent to MDH for bacterial, bacterial toxin, and viral testing. A SPRCDPH sanitarian conducted environmental health assessments at the restaurant on June 19 and June 26.

Three of the four complainants fit the case definition. The fourth had milder symptoms of nausea and cramps. Of the three cases, all had diarrhea and cramps, and one of the three had vomiting. The incubation periods were 1.5 hours, 10 hours, and 38 hours, respectively. Durations of illness were 10 hours, 2 days, and 4 days, respectively. Food items consumed by the cases included tuna almond salad, iced tea, black bean potato with sour cream and guacamole, bread and butter, eggs, and muffins. All of the four complainants reported dining with one other person who did not become ill; no information was obtained about what the dining companions ate.

The stool sample from a case tested by MDH was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, *Shigella*, *Bacillus cereus*, *Clostridium perfringens* enterotoxin type A, *Staphylococcus aureus*, and calicivirus.

On June 19, the SPRCDPH sanitarian discussed the complaints with restaurant management and checked the temperatures of the tuna and chicken salads. The temperatures were within the correct range. In response to the additional complaints, the sanitarian did an inspection of the restaurant on June 26. Employee illness logs were reviewed; no ill calls potentially due to gastroenteritis were noted during the month of June. The inspections revealed four critical foodhandling violations: 1) Potentially hazardous cold food items such as sour cream, guacamole, yogurt sauce, cut fruit, cheese, and cucumber soup were held at temperatures that exceeded 41°F; 2) Food contact surfaces including mixer bowls and iced tea urns were not properly cleaned and sanitized; 3) Shell eggs were stored over prepared foods; and 4) Employees were not using nail brushes when washing hands. The restaurant was ordered to correct these problems immediately.

The temporal clustering of four separate foodborne illness complaints among people who had eaten at the same restaurant suggested the possibility of a foodborne outbreak. However, the symptoms and incubation periods reported for ill persons were not consistent with any one etiologic agent, and the lack of information on foods eaten by non-ill diners precluded any statistical analysis of food items. The environmental health assessment found problems with maintaining foods at safe temperatures, cleaning and sanitizing food contact surfaces, and employee handwashing practices. These problems were addressed with restaurant management.

(13)
E. coli O157:H7 Infections Associated with a Family Reunion

June Lake County

On June 29, 2001 a case of *E. coli* O157:H7 was reported to the Minnesota Department of Health (MDH) through routine active laboratory-based surveillance. When interviewed, the case revealed that she knew of additional gastrointestinal illnesses associated with a family reunion. A total of 15 individuals had attended the reunion at a resort in Two Harbors from June 20 -24. Some of the attendees were residents of Kansas and California. All foods served at the reunion, including hamburger, were purchased on June 20 from a grocery store in Two Harbors. The family brought in water to the resort. The case provided the names and phone numbers of the other 14 reunion attendees to MDH.

MDH epidemiologists contacted the persons by phone and interviewed them about illness history and foods consumed at the family reunion. A case was defined as a reunion attendee with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) or with a culture-confirmed *E. coli* O157:H7 infection after attending the reunion. No stool samples were collected by MDH, but some cases had stool cultures tested through their health care provider.

All 15 reunion attendees were interviewed; three (20%) met the case definition, two (13%) reported mild symptoms that did not meet the case definition (one episode of loose stools occurring on the evening of June 24), and 10 (67%) reported no symptoms. Two of the three cases had culture-confirmed *E. coli* O157:H7 infections; the isolates from both cases had an indistinguishable pulse-field gel electrophoresis (PFGE) pattern (MN23). These two cases had prepared hamburger at the reunion on June 21. Their onset dates were June 24 and July 1, respectively. Both reported diarrhea, bloody stools, cramps, and vomiting. Durations of illness were 5 and 9 days, respectively. One case was hospitalized for 3 nights. The third case did not have a culture-confirmed infection; this case had onset of diarrhea, cramps, and vomiting with a duration of illness of 2 days. A stool sample was reportedly tested in a clinical laboratory and was negative for *E. coli* O157:H7. All of the five ill attendees (including those with symptoms that did not meet the case definition) ate hamburger on June 21, compared to two of the ten attendees who did not report any symptoms.

The PFGE pattern was posted on PulseNet by the MDH Public Health Laboratory. Two cases with matching PFGE patterns were identified; one case lived in Iowa, and the other case in Ohio. No connection was found between those cases and the Minnesota cases.

A traceback investigation of the ground beef from the grocery store was initiated by MDA on July 31. They identified three different distributors that supplied meat products to the store. These distributors purchased sirloin tri-tips, beef chuck, and coarse ground from four different packing plants. These meat products were used to make ground beef at the store.

This was an outbreak of *E. coli* O157:H7 infections associated with a family reunion. The mode of transmission may have been foodborne (i.e., from contaminated ground beef), but this could not be confirmed. The second confirmed case may have been a secondary case that acquired the infection through person-to-person transmission. The traceback conducted by MDA revealed numerous distributors and suppliers to the grocery store, and the supplier of the ground beef that was purchased for the family reunion could not be identified.

(14)
Gastroenteritis Associated with a Restaurant

June Ramsey County

On June 29, 2001 the Minnesota Department of Health (MDH) received a foodborne illness complaint concerning four persons who became ill after sharing a common meal at a restaurant in Roseville on Sunday, June 24. A group of approximately 25 coworkers had dined at the restaurant together. The caller stated that a group of four that had all consumed broiled seafood dishes subsequently became ill. Although there was a cafeteria at their workplace, the group denied any other common food items. An epidemiologist and sanitarian from the St. Paul-Ramsey County Department of Public Health (SPRCDPH) were notified, and an investigation was initiated.

The caller refused to give contact information for the other persons in the party. She stated she would have the other three reportedly ill persons call MDH; two of them ultimately contacted MDH. The original caller ate broiled shrimp, salad, onion blossom, bread and butter, and steamed vegetables. This person reported diarrhea and cramps with an incubation period of 3 hours. A second individual ate broiled walleye, salad, onion blossom, and bread and butter. This person reported diarrhea, cramps, vomiting, and a fever beginning 4 hours after the meal. The third individual that contacted MDH ate the same items as the second person; this person had diarrhea and cramps beginning 4 hours after the meal. Durations of illness were about 1 day.

A SPRCDPH sanitarian visited the restaurant on July 2. The sanitarian examined the preparation of the onion blossom appetizer and did not identify any concerns. There were no reports of employee illness and no other customer complaints were received by the restaurant.

This was an probable outbreak of gastroenteritis associated with a restaurant. The symptoms and short incubation and duration suggest a bacterial intoxication; however, no specific food vehicle or source of contamination was confirmed. Due to the small number of cases, the refusal of the complainant to provide a list of all attendees so a case-control study could be conducted, and the fact that those ill shared other potential exposures at work, this could not be confirmed as a foodborne outbreak.

(15)
Gastroenteritis Associated with a Restaurant

July Hennepin County

On July 17, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of gastrointestinal illness in four of six individuals who ate together at a restaurant in Minneapolis on July 13. The individuals denied any other common exposures. A sanitarian from Minneapolis Environmental Health went to the restaurant to conduct an inspection and collect food samples on July 17. The restaurant did not maintain an employee illness log, nor did it maintain a customer complaint log. The manager reported that the restaurant had not received any other complaints. In addition, the manager reported that none of the employees had been ill in the few days prior to the complainants' meal date. The restaurant provided the Hennepin County Community Health Department the names of nine patrons who ate at the restaurant on July 13. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected from the ill patrons.

The four ill complainants were interviewed, and two met the case definition. Both cases reported diarrhea as their only symptom. Onset of illness occurred on July 14. The incubation periods for the two cases were 14 and 16 hours, and the duration of illness was 18 and 34 hours, respectively. Both cases reported eating chicken, flat bread, and rice. Six additional patrons were contacted by phone to assess illness. None of those persons were ill.

At the time of the restaurant inspection, the sanitarian found multiple problems. Food had been prepared ahead of time and was stored in unlabeled containers at a temperature greater than 50°F. There were no standards for reheating the prepared food before serving it to patrons, and no one was checking the temperature of the reheated food items. One of the handwashing sinks was not functioning. The restaurant was instructed to immediately change its cooling methods to follow Minnesota Food Code 3-501.15.

This was a probable outbreak of gastroenteritis in persons who ate at a restaurant. Based on the patrons' incubation periods, symptoms, and meals, *Clostridium perfringens* or *Bacillus cereus* may have been the agent that caused their illnesses. Inadequate cold storage of prepared foods could have contributed to bacterial growth and multiplication.

(16)
Calicivirus Gastroenteritis Associated with a Gathering in a Private Home

August Hennepin County

On August 8, 2001 the City of Bloomington Environmental Health (CBEH) was notified by the Minnesota Department of Health (MDH) of illness among a group of persons who attended a private gathering on August 5. Items consumed during the function included German chocolate cake, white sheet cake, lemonade, ice, and water. CBEH staff obtained a list of attendees and interviewed them about illness symptoms and food history. A case was defined as any person who developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the event. One stool specimen was submitted to MDH for viral and bacterial testing.

Nine of 13 attendees interviewed met the case definition of illness. Eight (89%) cases had vomiting, six (67%) had diarrhea, three (33%) had cramps, and three (33%) had a headache. The median incubation period was 32 hours (range, 23 to 44 hours). The median illness duration was 12 hours (range, 0.3 to 20 hours). None of the food items consumed were statistically associated with illness. The stool specimen was negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. The stool specimen was positive for calicivirus.

An inspection was conducted at the grocery store where the German chocolate cake was purchased. No other complaints of illness associated with the grocery store's German chocolate cake were identified, and no critical food safety violations were detected.

Interviews revealed that the likely source of the illnesses was a contaminated foodhandler who also cared for her recently ill grandchild the day of the gathering. The child had been ill with vomiting and diarrhea on August 2 and 3. The child's parents did not attend the function on August 5, due to illnesses involving vomiting and diarrhea. The parents had dropped the child off at the grandparents' house, the site of the gathering, prior to the event.

This was an outbreak of calicivirus gastroenteritis associated with a gathering in a private home. It was unclear whether viral transmission occurred via food or via contact with a recently ill child at the gathering who had contact with the guests, the foodhandler, and the food.

(17)
Calicivirus Gastroenteritis Associated with a Party Held in a Private Home

September Dakota County

On August 17, 2001 the Minnesota Department of Health (MDH) Acute Disease Investigation and Control Section received a report of gastrointestinal illness from a party of 20 people who attended a birthday party at a private home in Apple Valley on September. MDH obtained a list of persons attending the birthday party and interviewed them about illness history and food and beverages consumed at the party. A case was defined as any person who attended the party and subsequently developed vomiting or diarrhea (≥3 loose stools in a 24-hour period). Stool samples were collected from four individuals and submitted to MDH for bacterial and viral testing.

Of the 17 attendees interviewed by MDH, 12 (71%) met the case definition. Of the 12 cases, 11 (92%) reported diarrhea, 10 (83%) reported vomiting, seven (58%) reported cramping, and four (33%) reported fever. Illness onsets occurred on September 15 and 16; the median incubation period was 35 hours (range, 5 to 53 hours). Duration of illness ranged from 24 to 72 hours.

No food items were statistically associated with illness. Several attendees prepared food for the party; one of them reported an ill child in the household with onset of vomiting and diarrhea approximately 2 days before the party.

The four stool specimens were negative for *Campylobacter*, *E. coli* O157:H7, *Shigella*, and *Salmonella*. One stool specimen was positive for calicivirus.

This was an outbreak of calicivirus gastroenteritis associated with a birthday party in a private residence. No food was conclusively identified as the vehicle for this outbreak. Person-to-person transmission could not be ruled out.

(18)
Gastroenteritis Associated with a Restaurant

September Scott County

On September 26, 2001 the Minnesota Department of Health (MDH) was notified through the foodborne illness hotline of gastrointestinal illness in three of six individuals who ate together at a restaurant in Savage on September 25. The individuals denied any other common exposures.

An MDH sanitarian went to the restaurant to conduct an inspection on September 27. At the time of the restaurant inspection, the sanitarian concentrated on the preparation of the ground beef products because all three of the ill complainants consumed products made with ground beef. The restaurant manager reported that the restaurant had not received any other complaints. In addition, the manager reported that none of the employees had been ill in the few days prior to the complainants' meal date. The restaurant provided MDH with a partial list of restaurant patrons obtained from credit card receipts. 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. No stool samples were collected from the ill patrons.

Three complainants and five additional patrons were interviewed, and four (50%) met the case definition. All four (100%) cases reported diarrhea, two (50%) cramps, one (25%) vomiting, and one (25%) fever. Onset of illness occurred on September 26. The median incubation period was 11 hours (range, 8 to 20 hours). The median duration of illness was 21 hours (range, 9 to 48 hours).

The patrons reported eating chips and salsa, rice and beans, taco salad, tacos, and ground beef items, including enchiladas, burritos, a tostaguac, and a tamale. No food items or categories of food (i.e., chicken vs. beef items) were significantly associated with illness. The ground beef product was made from scratch and then stored in a pan on a steam table. The ground beef was not uniformly heated within the pan; however, as the temperature ranged from 129 F to 163 F. The coolers registered at the appropriate temperature.

This was a probable outbreak of gastroenteritis associated with a restaurant. Based on the patrons' incubation periods, symptoms, and meals, *Clostridium perfringens* may have been the agent that caused their illnesses. During the restaurant inspection conducted 2 days after the complainants' meal date, the ground beef product was being held at an inadequate temperature in the steam table. Therefore it is possible that the ground beef, or other hot foods, could have been held at an inadequate temperature on the complainants' meal date, thereby causing their illness.

(19)
Calicivirus Gastroenteritis Associated with a Restaurant

October Ramsey County

On October 31, 2001 the Minnesota Department of Health (MDH) was notified of an outbreak of gastrointestinal illness among five persons, representing three households, who ate at a restaurant in North St. Paul on October 27. The woman who made the initial complaint was dining with a friend. As they were leaving the restaurant, the woman's brother, sister-in-law, and niece arrived to have dinner. All five individuals eventually became ill. They reported that they did not have other recent common meals.

A Ramsey County sanitarian was contacted, and an investigation was initiated. The sanitarian visited the restaurant on November 1 to speak with management staff and evaluate food preparation and handling procedures. MDH contacted the restaurant manager to get a list of employees, and food worker interviews were conducted. The sanitarian was not able to get additional names and telephone numbers of restaurant patrons who had eaten at the establishment on October 27; therefore, no additional patron interviews were done. A case was defined as any person who developed vomiting or diarrhea (≥3 loose stools in a 24-hour period) after eating at the restaurant. MDH collected stool samples from three of the five ill patrons for bacterial and viral testing.

Of the five cases reporting illness, five (100%) had diarrhea, four (80%) had vomiting, three (60%) had cramps, one (20%) had fever, and no one had bloody stools. The median incubation period was 39 hours (range, 11 to 68 hours). No common food items could be established. All three stool samples tested negative for *Campylobacter, E. coli* O157:H7, *Salmonella,* and *Shigella,* but all three tested positive for calicivirus.

Upon interviewing restaurant employees, MDH identified a cook who reported gastrointestinal illness. However, the employee claimed an onset date of November 3, which was a week after the patrons dined at the restaurant. When the sanitarian noted that food workers used bare hands while preparing lettuce and other cold food items, he recommended the use of gloves and thorough handwashing. He cited one food worker for improper handwashing. The restaurant manager denied any additional complaints of illness from patrons.

This was a probable outbreak of calicivirus gastroenteritis associated with a restaurant. No specific food vehicle was identified, nor were any food workers found to be ill at the time the patrons ate at the restaurant. Person-to-person transmission could not be ruled out.

(20)
Calicivirus Gastroenteritis Associated with a Party in a Private Home

November Scott County

On November 6, 2001 the Minnesota Department of Health (MDH) was notified of gastrointestinal illness occurring among guests of a family in Savage from November 2-4. Fifteen people, including the host family, stayed at the residence, ate four meals together, and participated in a local craft fair. Nine people were Wisconsin residents. Complete lists of the guests and the foods served during the weekend were obtained. Epidemiologists from MDH contacted guests about their illness history and the meals they had eaten on November 2 and 3. A case was defined as a person who was a guest or a family member in the home and subsequently became ill with vomiting or diarrhea ($\geq$3 loose stools within a 24-hour period). Stool samples were collected from two individuals and submitted to MDH for bacterial and viral testing.

The Minnesota Department of Agriculture (MDA) was contacted to inspect the grocery deli where the sandwiches served November 3 were purchased. The MDA conducted an inspection addressing handwashing, employee illness, and temperature violations.

All 15 persons staying at the residence were interviewed, and 13 (87%) met the case definition. Of the 13 cases, 11 (87%) reported diarrhea, 10 (77%) reported vomiting, seven (54%) reported cramps, and six of 11 (55%) reported subjective fever. Onsets of illness for 11 of the 13 cases were between 5:00 A.M. and 6:00 P.M. on November 4. The remaining two cases became ill on November 5 between 6:00 A.M. and 6:00 P.M. These two individuals came late to the weekend function, and did not eat with the group until Saturday evening, November 3. The median duration of illness was 23 hours (range, 1 to 37 hours). Incubation periods could not be calculated because the group ate four meals together. No food item or meal was statistically associated with illness. The two stool samples tested negative for *Campylobacter*, *E. coli* O157:H7, *Salmonella*, and *Shigella*. Both stool samples tested positive for calicivirus.

The MDA inspection did not identify any serious problems with the deli. Personal hygiene was found to be adequate, including proper handwashing and use of gloves. Although there was no employee illness log, the manager reported that there had been no ill employees recently. However, individual employees were not interviewed.

An outbreak of calicivirus gastroenteritis occurred among weekend houseguests in Savage. None of the guests or hosts reported illness in the week preceding the event, and there were no reported ill food workerss at the deli providing Saturday's lunch. The source of the outbreak was not determined. The

clustering of most illness onsets within an 11-hour period on November 4 suggests a common source outbreak. No meals or food items were statistically associated with illness; this was likely due to the fact that only two individuals did not become ill. Person-to-person transmission could not be ruled out.

(21)
Viral Gastroenteritis Associated with a Restaurant

November Hennepin County

On November 26, 2001 a sanitarian from the Hennepin County Community Health Department (HCCHD) took a foodborne illness report from an individual who had eaten with two other people at a restaurant in Brooklyn Center on November 21. The caller reported that all three people had become ill with gastrointestinal symptoms after the meal; the caller also said that the three had no other common meals and no recently ill household members. HCCHD initiated an investigation of the complaint. Complainants were interviewed by epidemiologists from HCCHD and from the Minnesota Department of Health about food consumption and illness history. A case was defined as a person with onset of vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) after eating at the restaurant. No stool samples were collected. An HCCHD sanitarian contacted the restaurant by phone on November 26 and visited the restaurant on November 29.

All three patrons met the case definition. All three had diarrhea and cramps, one had vomiting, and one had fever. No one reported bloody stools. Incubation periods were 33 hours, 27 hours, and 43 hours. Durations of illness were 14 hours, 36 hours, and 48 hours. All three had a roast beef hoagie sandwich and a beverage with ice; two of the three also reported sharing garlic cheese bread.

When a sanitarian from HCCHD contacted the restaurant by phone on November 26, the manager reported that no food workers were ill and that the restaurant had not received any complaints. On November 29, the sanitarian went to the restaurant to interview food workers about recent illness. Of 10 employees who were working on November 21, three were interviewed in person and three were interviewed by phone; no one reported any gastrointestinal illness in themselves or in their households since November 14. The manager reported that there were no known ill employees and no ill employees recorded on a log. Each day, the restaurant prepares three to five large food orders and delivers them to groups. The restaurant had not received any complaints of illness from any of those catered groups, nor had they received complaints from any other patrons. Catered groups were not contacted to ascertain illness.

The symptoms, incubation periods, and durations of illness of these three cases were consistent with viral gastroenteritis caused by a Norwalk-like calicivirus. Due to the small number of cases and lack of additional information, this could not be confirmed as a foodborne outbreak.

CONFIRMED WATERBORNE OUTBREAKS
(DRINKING WATER)

(1)
Copper and Other Metal Poisoning Associated with Drinking Water at a Church

September Douglas County

In October 2001, the Minnesota Department of Health (MDH) Environmental Health Drinking Water Protection Section (DWP) notified the MDH Acute Disease Investigation and Control Section of an outbreak of gastrointestinal illness caused by ingestion of high levels of copper and other metals in water at a church in Alexandria on September 16. Four children drank a soft drink made from a powder mix and tap water, and became ill with gastrointestinal symptoms minutes later. Church staff notified the Douglas County Hospital. The Douglas County Hospital notified Douglas and Pope Counties Environmental Health (DPCEH), Minnesota Poison Control, and the MDH Environmental Laboratory on September 17. An investigation was initiated on September 17.

The DPCEH sanitarian obtained information regarding the cases, including their exposure and their illness history. A case was defined as a person who became ill with gastrointestinal symptoms immediately after drinking the soft drink.

On September 18, the DPCEH sanitarian conducted an inspection of the facility and investigated the events leading to the outbreak. During the initial inspection, the DPCEH sanitarian obtained soft drink that was served, powder mix, and water samples for testing. DWP conducted another inspection of the facility and collected additional water samples for testing on September 28. The MDH Environmental Laboratory tested the samples for metals, nitrates, and coliform bacteria.

All four children who drank the soft drink became ill within a few minutes. All four experienced vomiting, without any other signs or symptoms. All four recovered within a few minutes of vomiting. None sought medical care. The cases' ages ranged from 3 to 13 years. There were no reported cases among persons who did not drink the soft drink mix.

The investigation revealed that well drillers had replaced the pump and pressure tank on the well on September 7, then added a calcium hypochlorite (chlorine) solution to the well for disinfection. The water distribution system was then reported to be flushed free of the chlorine solution, but the flushing apparently did not include the line to a faucet which was subsequently used for making the soft drink. The soft drink was made with tap water from a faucet that had not been used since work on the well was completed on September 15. The soft drink was stored overnight and served to the children the next day. On several occasions after the well work was completed and before September 16, water from other taps was consumed without ill effects.

Results from tests of the leftover soft drink and water samples obtained during the initial inspection revealed extremely high levels of copper, lead and other metals. The soft drink mix from the same pitcher consumed by the cases had a pH 3.6 and contained 69,300 µg/L of copper, 1,800 µg/L of lead, 9,650 µg/L of iron, 1,270 µg/L of aluminum, 28.8 µg/L of antimony, 54 µg/L of arsenic, 11.3 µg/L of cadmium, 3.7 µg/L of thallium, and 9,460 µg/L of zinc. A water sample obtained from a mop sink at the time of the initial inspection had a pH of 8, and contained 3,980 µg/L of copper, 28 µg/L of lead, 377 µg/L of iron, and 38.1 µg/L of antimony. Soft drink prepared using water from the laboratory had a pH of 3, contained 37.1 µg/L of antimony and 2.7 µg/L of thallium, and tested below action levels,

secondary standards, or detection levels for other metals. Nitrate and coliform results were below reportable levels for all samples.

With the exception of water obtained from the first draw of the kitchen tap gooseneck, all additional water samples obtained from several sites at the church on September 28 tested below action levels, secondary standards, or detection levels. Water from the kitchen tap gooseneck contained 65.1 µg/L of lead. The sample obtained from the same tap after flushing tested well below the action level for lead, 1.1 µg/L. Based on these laboratory results, it was recommended that consumers of tap water from the church flush the tap before use.

The clinical picture of the cases was consistent with copper poisoning. The outbreak was due to drinking a soft drink made from tap water that contained high levels of copper and other metals. Disinfection following the repair work, without subsequent complete flushing of all the water distribution lines, probably resulted in corrosion of water distribution piping, and most likely was a contributing factor to the high level of water contamination with metals.

(2)
Copper Poisoning Associated with Drinking Water at a School

November Nobles County

On November 19, 2001 the Minnesota Department of Health (MDH) Acute Disease Investigation and Control Section received a report from a Nobles-Rock Public Health Services sanitarian of sudden gastrointestinal illness in elementary school children after they drank "blue" water from the drinking fountain at an elementary school in Worthington. Of the 960 children at the school, 28 became ill (3%). Of the 28 who become ill, all experienced nausea, and eight (29%) reported vomiting. Symptoms started approximately 5-15 minutes after the children drank the water. The duration of illness was less than 24 hours.

School officials and the sanitarian determined that the cause of the "blue" water may have been a newly installed water treatment device. The device distributed water to the drinking water coolers and outside faucets with the purpose of preventing scaling on the inside of the plumbing system. The soft water system, which supplied water to the rest of the school, was not connected to the device.

The device was taken off-line on November 19 and flushed. The Nobles-Rock sanitarian and an MDH plumbing inspector took water samples on November 19 (before and after the flush) and November 26. On November 20, the device was completely disconnected and the water distribution system was disinfected; all faucets that could be used for drinking were shut down; bottled water was supplied for drinking; and the kitchen prepared foods that did not require water. The distribution system was again disinfected and flushed on November 23-24.

Copper levels in the water from the drinking fountain used by the ill children were 43,000 µg/L before flushing and 1,600 µg/L after flushing; copper levels in the water from the inside of the scaling device canister were 270,000 µg/L and lead level was 23,000 µg/L. Other sampling points also yielded copper and lead levels well above standard acceptable levels.

The cause of copper poisoning at the elementary school was an incorrectly installed scaling prevention device. The school district implemented routine testing of copper levels in the water at the school.

CONFIRMED WATERBORNE OUTBREAKS (RECREATIONAL WATER)

(1)
Calicivirus Gastroenteritis Associated with a Swimming Beach

July Hennepin County

On July 18, 2001 the Deephaven police department contacted the Hennepin County Community Health Department (HCCHD) to report that a child had become ill with gastroenteritis after swimming at a beach in Deephaven on July 11. The parent also indicated that several other children had been ill during the same time period. On July 20, the Deephaven police department contacted HCCHD to report gastrointestinal illness in two other families with children who had attended swim lessons at the beach during the week of July 16. The children had onsets of symptoms ranging from the evening of July 19 to the early morning of July 20. HCCHD initiated an investigation to determine whether the illnesses were associated with community spread or with exposure to the beach.

The swimming lessons coordinator and parents who had reported ill children provided HCCHD with names and phone numbers of others who had used the beach. Persons were interviewed by HCCHD epidemiologists using a standardized questionnaire about exposures and illness history. A case was defined as any person with recent vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period). Stool kits were obtained from four ill persons and sent to the Minnesota Department of Health (MDH) for bacterial and viral testing.

Sixty-seven (76%) of 88 persons interviewed met the case definition. Fifty-seven (85%) had vomiting, 46 (69%) had cramps, 38 (57%) had diarrhea, and 25 (37%) had fever. Of the 67 cases, 40 cases (60%) had been swimming at the beach prior to their illness (primary cases). Their onset dates ranged from July 12 to July 27. Of the 40 primary cases, 29 (73%) were 10 years old or younger. Ten cases (15%) had been swimming at the beach but had family members that had also swam at the beach and had became ill at least 39 hours before their onset (likely secondary cases); six cases (9%) had not been swimming at the beach, but had a previously ill family member (also likely secondary cases); six cases (9%) did not swim at the beach and did not have any previously ill family members (community cases); two cases (3%) were family members of those who did not swim at the beach; and three cases (4%) were individuals who were ill on the same day they visited the beach. An epidemic curve showed that there was illness in the community prior to and during the outbreak among people who did not use the beach. Incubation periods could not be calculated for all cases because of their frequent use of the beach. Incubation periods were calculated for 41 cases; the range of incubation periods was 11 to 52 hours with a median of 31 hours.

All four stool specimens tested by MDH were negative for bacterial pathogens. Two of the four stools were positive for calicivirus.

Water samples were taken from the beach on July 24 and on July 26. The samples were tested for fecal coliforms. The results of all samples taken were reported as <20 fecal coliforms per 100 ml, indicating no evidence of fecal contamination. On July 30, water samples were taken from all Deephaven beaches and tested for fecal coliforms; these tests also were negative for fecal coliforms. The beach was closed on July 25 and reopened on July 31. Do Not Swim signs were posted on all Deephaven beaches. The signs requested that any person who was currently ill with vomiting or diarrhea, or who had experienced

vomiting or diarrhea within the last 72 hours, not swim at any beach. All cities with beaches on Lake Minnetonka were requested to post the signs.

During the outbreak, temperatures often ranged from 80 to over 90° F. It was estimated that over 200 persons were using the beach each day. Of these 200 persons, most of them were under 14 years old, according to the Deephaven police and interviewed parents. One parent estimated that about half of the children were less than 6 years old. It is unknown how many of those children were in diapers. There were two reports of a child vomiting on the beach. There was a portable toilet on the beach, but it lacked handwashing facilities. There are no water sources such as fountains, hand pumps, drinking fountains, or bathroom sinks. In addition to recommending that beaches post signs warning ill persons not to swim, HCCHD recommended that handwashing facilities be made available at all beaches with portable toilets.

This was a waterborne outbreak of calicivirus gastroenteritis associated with a swimming beach. There was evidence that calicivirus infections were spreading through the community before and during the outbreak. The water was likely contaminated by ill children who may have had episodes of vomiting or diarrhea while swimming.

(2)
E. coli O157:H7 Infections Associated with a Swimming Beach

July Hennepin County

On July 30, 2001 the Minnesota Department of Health (MDH) began investigating a cluster of six *E. coli* O157:H7 cases that were reported through routine active surveillance. Four of the six cases were residents of Bloomington or Edina. On August 1, laboratory testing indicated that *E. coli* O157:H7 isolates from all six cases were indistinguishable by pulsed-field gel electrophoresis analysis (the subtype was designated MN570). By August 1, five of six cases had been interviewed; four of these five interviewed cases reported swimming at a beach in Bloomington the week of July 16. A review of water samples collected from the lake by the City of Bloomington on July 18, 24, 30, 31, and August 1 indicated that the fecal coliform counts were above the recommended level of 200 per 100 ml. Based on the elevated levels and the cases of *E. coli* O157:H7 associated with swimming at the beach, the beach was closed on August 2.

Persons who called the City of Bloomington or MDH to report illness after swimming in the lake were interviewed by epidemiologists from MDH. The interview consisted of questions about swimming dates and activities, food and water consumed at the swimming beach, and attendance at a daycare or preschool. A case was defined as anyone who swam at the beach and subsequently developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period. No stool samples were collected by MDH. The majority of the ill persons sought medical attention from their healthcare providers.

On August 2, epidemiologists from the Bloomington Health Department and MDH faxed a health alert to clinics and hospitals serving the Bloomington/Edina area. The letter alerted healthcare providers to the outbreak and requested that they notify MDH if they have any presumptive or laboratory-confirmed cases of *E. coli* O157:H7. In addition, an epidemiologist from MDH called six of the primary clinics and hospitals in the area to ascertain presumptive or laboratory-confirmed cases of *E. coli* O157:H7. Patients who were reported to MDH because of confirmed or presumptive infections were contacted by telephone to assess illness history and exposures to the beach.

Thirty-three persons who swam at the beach during the period in question were interviewed, and 20 (61%) met the case definition. Ten cases had culture-confirmed infections with *E. coli* O157:H7 and one with *Campylobacter jejuni*. Of the eight *E. coli* O157:H7 isolates analyzed by PFGE, seven were subtype MN570 and one was subtype MN578 (two bands different from MN570). Cases reported swimming at the beach from July 12 to July 30. The cases that had culture-confirmed infections with *E. coli* O157:H7 reported swimming at the beach from July 12 to July 21. Onsets of illness ranged from July 17 to August 5. All 20 cases reported diarrhea, 17 (85%) reported cramps, 13 (65%) reported bloody stools, eight (40%) reported fever, and seven (35%) reported vomiting. Five (25%) cases were hospitalized for their illnesses. The median duration of hospitalization was five days (range, 3 to 9 days). There were no cases of hemolytic uremic syndrome.

There were five cases that reported attending daycare during or shortly after their illness. MDH epidemiologists followed up with the five daycare program directors to assess illness among other children in the daycare, make recommendations about the exclusion of persons infected with *E. coli* O157:H7, and discuss appropriate cleaning and disinfection procedures. One of the five daycares had an outbreak where seven (58%) of 12 children were ill, and three (25%) had confirmed *E. coli* O157:H7 infections.

The City of Bloomington met with the supervisor of Bloomington Park and Recreation Services to discuss the coliform levels in the lake, and the outbreak of *E. coli* O157:H7 associated with the beach. The beach staff was given information on *E. coli* O157:H7, including its symptoms, mode of transmission, and preventive strategies for the future. The preventive strategies proposed by the City of Bloomington included the use of swim pants for young, diapered children, and scheduled, hourly bathroom breaks. The Centers for Disease Control and Prevention "Healthy Swimming" brochures were provided to Park and Rec Services for use at the pools and lakes that are overseen by their staff. The Park and Rec staff placed personnel at the entrance of the beach and informed visitors of the situation. A sign was posted at the beach entrance, which informed visitors that the beach was closed due to elevated fecal coliform levels in the water.

The City of Bloomington sampled the beach water on a daily or biweekly basis. The fecal coliform levels did not decrease during the remainder of the summer. Based on the results from the water testing, the City of Bloomington decided to keep the beach closed for the rest of the summer season. Bloomington conducted three surveys/inspections to examine the flow of water into and out of the lake and the sewage systems of homes on the lake. They did not detect any failed systems that would have contributed to the elevated fecal coliform levels. The City of Bloomington believed that the high number of geese that occupied the beach during the summer may have contributed to the elevated fecal coliform levels. As a result, Park and Rec Services researched different methods for keeping excessive goose droppings from entering beach water.

This was an outbreak of *E. coli* O157:H7 infections among persons who swam at a beach during mid-to-late July. A source of contamination was not identified. However, as the beach is located in a metropolitan area (and not in an agricultural area susceptible to runoff contaminated with cattle manure), the most plausible source of contamination is a fecal accident(s) by an infected person(s).

PROBABLE WATERBORNE OUTBREAKS
(RECREATIONAL WATER)

(1)
E. coli O26:NM Infections Associated with a Swimming Beach

July Stearns County

In September 2001 a cluster of cases infected with *E. coli* O26:NM pulsed-field gel electrophoresis subtype pattern ECM11 was detected by the Minnesota Department of Health (MDH) through an enhanced laboratory surveillance project in collaboration with the St. Cloud Hospital Laboratory. The four cases that made up the cluster had stool specimen collection dates from August 9 to September 4. The four cases were interviewed about illness, travel, swimming, animal exposures and food consumption history with a standardized questionnaire. All cases resided in Stearns County.

The cases ranged from 1 to 32 years of age. The onset of diarrhea for the cases ranged from August 6 to September 1. All four reported having diarrhea and cramps, two (50%) reported fever, two (50%) reported bloody stools, and one (25%) reported nausea. Duration of diarrhea ranged from 4 to 7 days (median, 5 days).

Three of the four cases reported swimming at a lake in a park in Richmond within 7 days prior to the onset of illness. The cases had no other exposures, restaurants, or food items in common. The three cases with the reported lake exposure ranged in age from 1 to 10 years, and had onset of illness from August 6 to August 15.

The beach in Richmond is on a lake in a chain of lakes. The chain of lakes is in an agricultural region of the state; therefore, these lakes likely receive agricultural run-off.

This was a probable waterborne outbreak of *E. coli* O26:NM infections associated with exposure to a swimming beach in late July or early August.

NON-FOODBORNE, NON-WATERBORNE OUTBREAKS: OUTBREAKS DUE TO ANIMAL CONTACT

(1)
Salmonella Typhimurium Infections Associated with Exposure to Owl Pellets in Elementary Schools

May Washington County

On May 22, 2001 the Washington County Department of Public Health and Environment (WCDPHE) received two independent reports from physicians of children from an elementary school in Bayport (School A) with acute febrile gastroenteritis. *Salmonella* had reportedly been cultured from the stool of one child. The school nurse for the elementary school notified the WCDPHE of a high absenteeism rate following the physician reports. Six days into the investigation, WCDPHE was notified of an outbreak in a second elementary school (School B). Both elementary schools are located within the same school district and have student populations of kindergarten through grade 6. Staff from WCDPHE, in collaboration with Minnesota Department of Health (MDH) staff, investigated the outbreaks.

A case-control study was conducted among students attending School A. Student school rosters were secured. These included school enrollment by grade and teacher, and after-school programs (i.e., after-school child care referred to as Adventure Club, Science Club and homework club). School food service menus for 2 weeks prior to the onset of illness were obtained. Other school activities and their corresponding student rosters (i.e., field trips, special events and animal activities) were obtained.

Student names were randomly selected from the school's student rosters. Students and/or their parents were interviewed about Adventure Club attendance, school breakfast and lunch item consumption, Science Club attendance, contact with animals and animal products, hand washing habits and illness history. A primary case was defined as an elementary school attendee who experienced diarrhea (≥ 3 stools in a 24 hour period) and fever, with an onset of May 14 or later or who was culture confirmed with *Salmonella*. A secondary case was defined as an individual who had symptoms compatible with the primary case definition, a documented exposure outside the school environment to a known case (i.e., sibling, parent, or neighbor), and an onset subsequent to the index case onset.

On May 22 an epidemiologist and environmental health specialist from WCDPHE evaluated the school's food service facility, obtained food service menus, interviewed food service and non-food service staff. Additional on-site evaluations were conducted to collect food service employee stool samples, assess a classroom chick-rearing project, conduct follow-up interviews of Adventure Club students and their parents, and to evaluate interventions.

The Science Club instructor for the school district, a naturalist from a local nature center, was interviewed regarding club curriculum and activities for the 2 weeks prior to onsets. The nature center facilities were evaluated on May 24 by MDH epidemiologists. Enteric samples (feces and pellets) were collected from various avian and reptile species utilized in the two most recent club activities. Environmental and feed samples for these species also were collected. The MDH Public Health Laboratory analyzed all samples for bacterial pathogens, and *Salmonella* isolates were subtyped by pulsed-field gel electrophoresis (PFGE). Stool samples were collected from suspect elementary school cases for bacterial, parasitic and viral pathogen analysis. All *Salmonella* isolates were subtyped by PFGE through MDH Public Health Laboratory. The methods utilized in the investigation of the first outbreak were applied in the second outbreak at School B, with the exception of student food histories.

Of 352 students enrolled in School A, 201 (57%) and four non-students were interviewed. Fifty-seven persons were excluded from the analysis as they had illness that did not meet the case definition. Eleven secondary cases (four non-student family members and 7 student-family members of student cases) were identified; they were also excluded from the analysis. Of the 137 students included in the analysis, 39 (28%) met the primary case definition. Of the primary cases, 38 (97%) reported diarrhea, 35 (90%) reported fever, 18 (46%) reported vomiting, and 10 (26%) reported bloody stools. Dates of illness onset ranged from May 17 to May 25. Twenty-seven cases submitted stool specimens for analysis; all were positive for *Salmonella* Typhimurium. All but one *S.* Typhimurium isolates had an indistinguishable PFGE pattern (designated TM353). Incubation periods ranged from 9 to 219 hours, with a median of 92 hours. Duration of illness ranged from 15 to 192 hours, with a median of 72 hours. Four primary cases were hospitalized. Of the eleven secondary cases, 11 (100%) reported diarrhea, 11 (100%) reported fever, four (36%) reported vomiting, and 4 (36%) reported bloody stools. Dates of illness onset ranged from May 20 to June 6. Stool specimens were not collected from secondary cases. No secondary cases were hospitalized. School food service workers did not reported illness within the 2 weeks preceding the first case's onset or the ensuing 2 weeks. The food service workers stool samples were negative for bacterial pathogens.

Illness was associated with being a member of Science Club (odds ratio [OR], 38.0; 95% confidence interval [CI], 5.0 to 308; $p<0.001$) and being a member of the after-school child care program, Adventure Club (OR, 7.0; 95% CI, 3.0 to 17.0; $p<0.001$). On May 16, the School A Science Club members dissected owl pellets (i.e., regurgitated indigestible bones, fur and feathers from recent meals) directly on a table in the school's cafeteria. Science Club students were not instructed to wash their hands following the dissection exercise. Concurrently, the Adventure Club program for students was being held in the cafeteria. Following the science club program, the lunchroom table was not sanitized before use by Adventure Club students for afternoon snack, or before school lunch the following day. Other school activities and cafeteria food items were not associated with illness.

Subsequent to the first outbreak at School A, a second outbreak was identified among Science Club members attending School B, another elementary school in the same district. During the investigation of this outbreak, 20 students, including 15 of the 18 Science Club members, and two non-student family members were interviewed. Six persons were excluded from the analysis, including two secondary cases among non-student family members. Of the 16 students included in the analysis, seven (44%) met the primary case definition. Of the primary cases six (86%) reported diarrhea, six (86%) reported fever, one (14%) reported vomiting, and one (14%) reported bloody stools. Dates of illness onset ranged from May 25 to May 30. Incubation periods ranged from 13 to 146 hours, with a median of 42 hours. No primary cases were hospitalized. Nine of the 15 Science Club members interviewed had dissected owl pellets on May 24. Seven of the nine (78%) students became ill. Six of these seven students reported touching the pellets. Six cases submitted stool specimens for analysis. *S.* Typhimurium TM353 was recovered from all specimens. Of the two secondary cases, one stool specimen was submitted for analysis; *S.* Typhimurium TM 353 was recovered. No secondary cases were hospitalized.

On May 24, the School B Science Club met in the school's science room to dissect owl pellets. The science room was not a multi-activity center for the school; other students were not exposed to pellet remnants and students were not allowed to consume food in the room. Hence, only Science Club student who dissect pellets, were exposed and became ill following the science exercise.

The pellets in the School A outbreak and the School B outbreak originated from a single barred owl held at a local nature center.

In total, for these two common source outbreaks, 46 primary cases were identified (39 School A students and seven School B students). An additional thirteen individuals were classified as secondary cases (family members of student cases attending either elementary school). Thirty-three (72%) of the primary cases and one (8%) of the secondary cases submitted stool samples for analysis. *S.* Typhimurium was cultured from all stool specimens; all but one of the primary isolates had an indistinguishable PFGE pattern TM353.

Twenty enteric and environmental samples from avian and reptile species and their terrariums or cages were collected at the local nature center. These samples included two owl pellets and fresh fecal matter from the barred owl from which all pellets used at the school originated; an environmental swab and water sample from a fox snake's terrarium and two snake cloacal swabs and fecal sample; an environmental swab and water sample from a painted turtle's terrarium and a turtle cloacal swab; an environmental swab and water sample from a frog's terrarium; a salamander cloacal swab, and four chicks and two mice (owl and snake feed). Of the twenty enteric and environmental samples, the owl feces, two owl pellets, snake terrarium, snake water, snake cloacal swab and fecal sample and, four frozen chicks yielded *S.* Typhimurium TM353. The barred owl continued to shed *S.* Typhimurium in feces for at least 4 months following the investigation. Prior to the outbreaks, the owl's and snake's diet had consisted of mice and chicks from a commercial feed source.

Interventions at the School A and School B included discontinuation of all self-service food activities from the school cafeteria (i.e., eliminated fruit and vegetable bars, sandwich and taco fixings), modification of end-of-school year celebrations (i.e., exclusion of home-prepared foods and self service food trays/buffets), implementation of strict exclusion of all school attendees reporting gastroenteritis, and implementation of personal hygiene instruction in all grade levels. Daily information sheets accompanied students to their homes, advising and updating parents of the investigation and current disease interventions for school and home environments. In addition, all students reporting gastroenteritis were immediately excluded from the school setting further reducing the likelihood of secondary exposure through other school activities.

These are the first reported common source outbreaks of salmonellosis due to contact with owl pellets. In response to these outbreaks the departments recommended to the school district that separate areas should be designated for school curricula and functions where animal contact is anticipated (i.e., these activities should not occur in food service areas). As with all animal-derived materials, handling owl pellets should be followed by sanitation of contact surfaces and thorough hand washing. Heat treated or sterilized owl pellets should be used in educational activities. Sterilized pellets can be obtained from commercial science curricula sources.

(2)

Multiple Enteric Pathogen Infections Associated with Exposure to Calves at a Day Camp

June Ramsey County

On June 20, 2001 the Minnesota Department of Health (MDH) received a telephone call from a mother whose child was diagnosed with an *E. coli* O157:H7 infection. The child had attended a farm day camp the week prior to her illness. During the summer of 2000, MDH investigated an outbreak of enteric infections of multiple etiologies at the same farm day camp in St. Paul. During the camp, the children were responsible for feeding and caring for a variety of farm animals, but the highlight of the program was providing direct, one-on-one care for calves. There were three levels of camp: Farm Hand for

grades K and 1, Ag Explorers for grades 2 through 4, and Ag Adventures for grades 5 through 8. There were eight one-week sessions scheduled for the summer of 2001, with a projected attendance of approximately 50 campers per session. The interventions that were implemented at the camp after the 2000 outbreak included removing sick calves from the barn, adding portable handwashing stations outside the calf barn, and emphasizing and supervising children's handwashing. Prior to the start of the 2001 camp sessions, recently published farm animal contact guidelines from the Centers for Disease Control and Prevention were given to the day camp coordinators, and 40 calves were tested for *E. coli* O157:H7. All 40 calves tested negative for *E. coli* O157:H7. Despite these interventions, an outbreak occurred among children who attended the first 2 weeks of camp in 2001.

Camp coordinators provided MDH epidemiologists with lists of children who attended the first 2 weeks of camp. MDH epidemiologists interviewed children about animal contact, hand washing practices, food consumption at the camp, attendance and food consumption at the family picnic held the last day of the camp session, and illness history. A case was defined as any person who attended the camp and subsequently developed vomiting or diarrhea ($\geq$3 loose stools in a 24-hour period) or had a laboratory-confirmed infection with an enteric pathogen. Stool samples were tested for bacterial and parasitic pathogens.

Epidemiologists from MDH and the University of Minnesota College of Veterinary Medicine, and an environmental health specialist from the sponsoring institution visited the camp on June 26. Representatives from the three organizations evaluated the camp program and its facilities. Fecal samples were collected from all available calves (n=60) on June 22 or 28.

After discovering that many campers were ill, including two who were infected with *E. coli* O157:H7, the camp was closed on Thursday, June 21. The camp remained closed until the investigation concluded that the camp could implement more extensive interventions and pose minimal risk to the campers. The camp reopened on Monday, July 16.

One hundred ten campers were interviewed, and 25 (23%) met the case definition. Twelve cases attended the first session of the camp, and 13 cases attended the second session. Eleven (10%) additional campers reported illness but did not meet the case definition. Six relatives of campers reported illness as well. Twenty-three (92%) of the 25 cases reported diarrhea, 17 (68%) reported abdominal cramps, 12 (48%) reported vomiting, eight (32%) reported fever, and four (16%) reported bloody stools. Two cases were hospitalized; one had a *Cryptosporidium* infection and the other was infected with *Cryptosporidium* and *E. coli* O157:H7. Dates of illness onset ranged from June 13 to 27. Campers were infected with a variety of pathogens, including *Cryptosporidium parvum* (8 campers), *E. coli* O157:H7 (4), non-O157 Shiga toxin producing *E. coli* (STEC) (5), and *Blastocystis hominis* (1). Four campers were infected with a combination of these pathogens, including two with *E. coli* O157:H7 and *Cryptosporidium*, one with non-O157 STEC and *Cryptosporidium*, and one with *Cryptosporidium* and *Blastocystis hominis*. *E. coli* O157:H7 (2) and *Cryptosporidium* (1) were isolated from three secondary cases.

Forty of 60 calves tested positive for at least one pathogen, including *Cryptosporidium parvum* (18 calves), non-O157 STEC (15), *Giardia lamblia* (14), *Salmonella* Dublin (6), *Campylobacter jejuni* (4), *Salmonella* Muenster (2), and *E. coli* O157:H7 (2). Sixteen calves had more than one pathogen identified from their fecal sample, including *Cryptosporidium* and *Giardia* (4 calves), *Cryptosporidium* and non-O157 STEC (3) *Cryptosporidium* and *Salmonella* Dublin (2), *Giardia* and non-O157 STEC (2), *Campylobacter* and non-O157 STEC (1), *E. coli* O157, *Salmonella* Muenster, *Cryptosporidium* and

Giardia (1), *Salmonella* Dublin, non-O157 STEC and *Cryptosporidium* (1), non-O157 STEC, *Cryptosporidium* and *Giardia* (1), and *Campylobacter jejuni* and *Giardia* (1).

Serotyping of the non-O157 STEC isolates from humans and calves was performed. Of the five campers that had non-O157 STEC infections, two were infected with *E. coli* O111:NM, two with *E. coli* Orough:H11, and one with an undefined serotype of STEC. Of the 15 calves that had non-O157 STEC infections, three were infected with *E. coli* O111:NM, six with *E. coli* O51:H11, and six with an undefined serotype of STEC.

Pulsed-field gel electrophoresis (PFGE) subtyping was conducted on several of the human and calf non-O157 STEC isolates. The two human *E. coli* O111:NM isolates were different patterns (ECM4 and ECM7). The three calf *E. coli* O111:NM isolates were all indistinguishable by PFGE and matched one of the human isolates (ECM4). The six calf *E. coli* O51:H11 isolates yielded three different patterns: ECM1 (4), ECM1a (1), and ECM2 (1). The two human *E. coli* Orough:H11 isolates were the same PFGE subtype as four of the calf *E. coli* O51:H11 isolates (ECM1).

The two calf *E. coli* O157:H7 isolates were different PFGE subtypes (MN561 and MN563). The six human *E. coli* O157:H7 isolates from campers and secondary cases were two different patterns: MN561 (5) and MN564 (1). Five of these six human *E. coli* O157:H7 isolates matched one of the calf *E. coli* O157:H7 isolates (MN561).

Pulsed-field gel electrophoresis was also conducted on five of six *S*. Dublin isolates. All five were the same PFGE subtype (DUB1). Polymerase chain reaction (PCR) analysis was performed on all human and calf *Cryptosporidium* specimens. Of the 18 calves positive for *Cryptosporidium*, eight were positive by fluorescent antibody (FA) testing but negative by PCR, seven were positive by FA and PCR, and three were negative by FA but positive by PCR. Of these ten specimens positive by PCR, all were genotype 2 and four exhibited the bgp3 allele of the GP-15 gene. Six of nine human *Cryptosporidium* specimens were received in the MDH Public Health Laboratory. Of these six, five were positive by FA and PCR, and one was positive by FA, but negative by PCR. The PCR subtyping analysis showed that all five human specimens positive by PCR matched the calves (genotype 2, bgp3 allele of GP-15 gene).

The only exposure significantly associated with illness was getting manure on hands (10 of 24 [42%] cases vs. 12 of 63 [19%] controls; odds ratio, 3.0; 95% confidence interval, 1.1 to 8.5; p=0.03).
The initial visit to the facility revealed that children had the opportunity for contact with numerous species of farm animals, including calves, pigs, sheep, horses, and chickens. The majority of animal contact was with calves, since the children were responsible for feeding, grooming, and cleaning the pens of the calves. Calves that were ill were housed in the same barn as the well calves.

The protocol for the camp was revised. The number of calves used during the camp was substantially reduced from one calf per camper to one calf per group of eight campers. The campers observed the educator caring for calves rather than providing direct care for their own calf. Campers were no longer allowed to enter the calf pens. The campers were required to wear short-sleeved shirts to eliminate long sleeve contact with animals and better facilitate personal hygiene and handwashing. Smocks and boots were provided to the campers in 5-8 grades who cared for the older heifers. Calves were kept outside the barn in taller pens that contained calf hutches. These pens were separated by about 1 foot to minimize direct calf-to-calf contact.

A new handwashing station was engineered in the camp building. Plumbing was run from a bathroom shower to the new handwashing station to provide a higher volume of warm running water. The

handwashing station was built at a lower height to facilitate handwashing among campers. The handwashing station was comprised of a trough with nine faucets (one for the educator and each camper in a group of eight) and one spigot. The educator controlled the spigot in order to minimize campers' contact with faucet handles. The camp educators emphasized and supervised the campers' handwashing after they had contact with animals and before they ate meals. The environmental health specialist from the sponsoring institution trained the camp educators on appropriate handwashing procedures. A handwashing video was incorporated into the curriculum to instruct campers on good practices.

The sponsoring institution's dietary staff cleaned and sanitized the water coolers on a daily basis. Individual cartons of milk were used rather than gallon containers. Parents were notified of the absence of refrigeration for bag lunches. Finally, a revised letter of consent, which explicitly explained the inherent risks of dealing with farm animals, was provided to parents.

This was the second outbreak of enteric infections of multiple etiologies among children who attended a farm day camp. Etiologies of human infections included *Cryptosporidium parvum*, non-O157 STEC, *E. coli* O157:H7, and *Blastocystis hominis*. Multiple pathogens also were isolated from calves at the day camp, including *Cryptosporidium parvum*, non-O157 STEC, *Giardia lamblia*, *Salmonella* Dublin, *Campylobacter jejuni*, *E. coli* O157:H7, and *Salmonella* Muenster. Interventions included the installation of a new stationary handwashing station; increased emphasis on, training about, and supervision of handwashing for campers and educators; and a revised protocol, which limited direct contact of campers and calves.

NON-FOODBORNE, NON-WATERBORNE OUTBREAKS: AN OUTBREAK DUE TO PERSON-TO-PERSON TRANSMISSION

(1)
E. coli O157:H7 Infections Associated with a Preschool

September Hennepin County

On Thursday, October 4, 2001 a physician at a Twin Cities hospital called the Minnesota Department of Health (MDH) Acute Disease Investigation and Control Section to report a positive *E. coli* O157:H7 stool culture in a child that was currently hospitalized with a diagnosis of intussusception. Attempts to follow up with the parents of the child that day were unsuccessful, as the child was undergoing surgery. On the morning of Friday, October 5 the director of the preschool in Edina contacted MDH epidemiologists. The preschool had been contacted by the parent of the child hospitalized with *E. coli* O157 late the previous day concerning the child's infection. The preschool had already consulted a local pediatrician for advice, and had done environmental cleaning. According to the preschool director, there had been increased absenteeism that week due to "stomach flu", and she knew of at least one other child with bloody diarrhea. Over 100 children attended the preschool. Children were divided into classes by age; 3 to 5 year-old classrooms were in one area of the preschool, and 2 year-old classrooms were in another. The initial information from the preschool director was that illnesses were clustered in the 3 to 5 year-old classes, with the exception of a 2 year-old attendee who had an ill sibling in a 3 to 5 year-old class. Food items served at the preschool consisted of pasteurized apple juice and snacks. The preschool director noted that the 3 to 5 year-old classes had visited a local apple orchard the week before; the dates of the visits were Tuesday, September 25, Wednesday, September 26, and Thursday, September 27. The brief field trips to the orchard consisted of a hayride and jumping in a bale of hay; some children ate apples or donuts.

The preschool director was advised about steps to take to prevent further infections in the preschool. An informational letter was written by MDH and sent by fax to the preschool on October 5 for distribution to parents. The letter outlined the situation at the preschool and described the need to exclude any child with diarrhea from preschool until the child had two stool cultures negative for *E. coli* O157. The letter also advised parents to notify MDH if their child had experienced any diarrhea (defined as $\geq$3 loose stools in a 24-hour period) since September 21.

MDH launched an investigation and contacted a sanitarian from the City of Edina, an epidemiologist from the City of Bloomington, and epidemiologists from Hennepin County.

The City of Edina sanitarian visited the preschool on October 5. The sanitarian assessed food items available, food sources, and foodhandling practices. No concerns were noted.

The preschool faxed a class roster with names and phone numbers of attendees to MDH. Beginning on the afternoon of October 5, epidemiologists from MDH and from Hennepin County contacted parents of preschoolers by phone about any symptoms experienced by their children, any recent history of gastroenteritis in their household, and activities on the apple orchard field trips. Interviewing of parents continued over the weekend of October 6 and 7.

As of Monday, October 8, eight preschool attendees with either culture-confirmed or probable infections with *E. coli* O157 were identified out of approximately 60 children interviewed. The epidemic curve

appeared consistent with a point-source outbreak. There was no obvious index case, and onset dates were clustered temporally, with the peak of illness onsets clustered around October 3. On October 8, a conference call was held with Hennepin County epidemiologists and sanitarians. Later that day, two sanitarians from Hennepin County inspected the apple orchard visited by the preschoolers during the week of September 24. The sanitarians assessed food items available, food sources, foodhandling practices, and employee health. No concerns were noted. An estimated 1,000 people had visited the orchard in the same week as the preschool students, but there were no indications of any illness apart from the preschool. The apples given to orchard visitors actually came from two other Minnesota orchards. Hennepin County notified the Minnesota Department of Agriculture as well as MDH about their findings.

On Tuesday, October 9, member(s) of the general public contacted the media about the investigation. On Wednesday, October 10 there were several print and electronic media accounts of the investigation, including the fact that an apple orchard was being investigated as a potential source. A media gathering was held at MDH on October 10 to answer questions about the investigation. Media reports of the outbreak triggered a large number of phone calls to MDH and other agencies on October 10, including many callers concerned about the possible orchard link; despite the extensive media coverage, no potential cases of *E. coli* O157 due to exposure to apple orchards were identified.

Also on October 10, the MDH Public Health Laboratory completed molecular subtyping using pulsed-field gel electrophoresis (PFGE) on *E. coli* O157 isolates from the preschool children that had been submitted to MDH by clinical laboratories. The PFGE pattern of the children's isolates was WA1. The parent of a child in the Twin Cities area who had an infection with *E. coli* O157 of the WA1 subtype infection in September was called back to ascertain any possible link to the preschool cases or to any apple orchards. This case did not attend the preschool and had not visited any orchards in the week prior to illness onset. It was likely that this case had acquired *E. coli* O157 from an ill cousin who lived on a dairy farm in another state (the cousin reportedly was confirmed to have an *E. coli* O157 infection). The case became ill around September 15, and played at the house of a preschool attendee while ill. When the parent of that preschool attendee was contacted, the parent reported that their child had onset of diarrhea on September 20. The diarrhea had lasted about a week, and the child had attended preschool for several days with diarrhea; the child was experiencing diarrhea on the day of the orchard field trip as well. The parent had not come forward previously, as requested, to report that their child recently had diarrhea. This child subsequently tested positive for *E. coli* O157, subtype WA1.

With the advent of this information, it appeared likely that the child who had onset on September 20 was the index case at the preschool and had exposed several other children at the preschool to *E. coli* O157 while ill. Of the children who were ill during the week of October 1, at least five attended preschool for at least one day while ill, thus exposing even more children to *E. coli* O157. A press release with this new information was sent out by MDH on the afternoon of October 10.

MDH identified 27 culture-confirmed cases of *E. coli* O157:H7 associated with the preschool: 19 preschool attendees, three parents, two siblings, one cousin, one teacher, and one church member who had been in the preschool area at the time of the outbreak. Three children (two preschool attendees and one cousin of an attendee) were diagnosed with hemolytic uremic syndrome (HUS) and hospitalized. One child died of HUS; the other two children recovered but were hospitalized for 10 and 12 days, respectively.

This outbreak of *E. coli* O157:H7 infections spread via person-to-person transmission highlights the importance of excluding children with diarrhea from preschool and daycare settings. Onset dates of

illness ranged from September 20 (index case) to October 18 (parent of an attendee). It is possible that the outbreak was amplified by sharing of foods and other activities among the preschool children during field trips to an orchard during the week of September 24. There was no evidence that any transmission occurred within the preschool subsequent to October 5, when the preschool became aware of the outbreak and took steps to prevent further cases.

Confirmed Foodborne Outbreaks
Minnesota, 2001

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jan	Restaurant, table service	12	0	Rice and beans	*Clostridium perfringens** or *Bacillus cereus**	Unknown	Olmsted
Jan	Restaurant, table service	86	2	Multiple cold food items (i.e., sandwiches, salads)	Calicivirus	Ill food workers	Anoka
Jan	Restaurant, table service	4	3	Unknown	Calicivirus	Unknown	Hennepin
Jan	Catered event	18	0	Beef stew	*Clostridium perfringens**	Improper cooling and reheating	Anoka
Feb	Restaurant, fast food	4	1	Burritos	Calicivirus	Ill food workers	Dakota
Feb	Restaurant, fast food	8	1	Unknown	Calicivirus	Food workers with ill household members	Dakota
Feb	Restaurant, fast food	4	0	Submarine sandwiches	Viral gastroenteritis*	Unknown	Hennepin
Feb	Restaurant, table service	6	2	Unknown	Calicivirus	Ill food workers	Ramsey
Feb	Health care center	80	4	Unknown	Calicivirus	Ill food workers	Otter Tail
Feb	Banquet, restaurant	23	2	Unknown	Calicivirus	Ill food worker with ill household members	Ramsey

* Epidemiologically defined agent

Confirmed Foodborne Outbreaks
Minnesota, 2001 (continued)

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Mar	Catered workplace event	42	1	Fresh fruit	Calicivirus	Unknown	Hennepin
Mar	Office party buffet at a restaurant	14	6	Cold prime rib sandwiches	Calicivirus	Ill food workers	Hennepin
Mar	Restaurant, table service	14	1	Raw oysters	Calicivirus	Contaminated raw product	Hennepin
Mar	Farm	4	4	Unpasteurized milk	*Campylobacter jejuni*	Raw product	Otter Tail
Mar	Catered workplace luncheon	6	0	Chicken salad sandwiches	Viral gastroenteritis*	Unknown	Hennepin
Mar	Birthday party, private home	11	1	Ham sandwiches	Calicivirus	Recently ill guests at event	Meeker
Apr	Restaurant, table service	5	1	Unknown	Calicivirus	Ill food workers	Hennepin
May	Restaurant, table service	2	0	Tuna salad	Scombrotoxin*	Improper holding temperatures	Hennepin
May	Banquets, hotel	64	1	Multiple cold food items (i.e., salad, fruit, vegetables)	Calicivirus	Unknown	Hennepin
May	Banquet, hotel	54	18	Eggs benedict	*Salmonella* Enteritidis	Inadequate cooking	Hennepin
May	Rehearsal dinner, private home	12	0	Unknown	Calicivirus	Unknown	Anoka

* Epidemiologically defined agent

Confirmed Foodborne Outbreaks
Minnesota, 2001 (continued)

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jun	Restaurant, table service	16	12	Eggs	*Salmonella* Enteritidis	Cross-contamination, time-temperature violations, infected food workers	Martin
Jul	Restaurant, table service	9	0	Salads	Viral gastroenteritis*	Ill food workers	Dakota
Jul	Restaurant, table service	17	1	Fried rice	*Bacillus cereus*	Improper cooling and storing	Dakota
Jul	Catered wedding reception	25	1	Buffet	Calicivirus	Ill guests at event	Olmsted
Jul	Convenience store	6	0	Taco pizza	Viral gastroenteritis*	Unknown	Mille Lacs
Aug	Restaurant, buffet	9	9	Unknown	*Salmonella* Newport	Time-temperature violations; cross-contamination	Olmsted
Aug	Restaurant, table service	3	2	Unknown	*Bacillus cereus*	Unknown	Hennepin
Aug	Restaurant, buffet	5	5	Unknown	*E. coli* O157:H7	Unknown	Douglas
Sep	Catered workplace luncheon	10	0	Roast beef and gravy	*Clostridium perfringens**	Improper cooling and storing, and re-use of foods	Dakota
Sep	Restaurant, table service	6	0	Unknown	Unknown	Unknown	Ramsey

* Epidemiologically defined agent

Confirmed Foodborne Outbreaks
Minnesota, 2001 (continued)

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Oct	Catered wedding reception	40	0	Vegetable salad	Viral gastroenteritis*	Unknown	Washington
Nov	Restaurant, table service	4	0	Salads	Viral gastroenteritis*	Ill food workers	Steele
Nov	Restaurant, fast food	22	0	Submarine sandwiches	Viral gastroenteritis*	Food worker with ill child	Carver
Nov	Restaurant, table service	4	1	Coleslaw	Calicivirus	Unknown	Hennepin
Nov	Restaurant, table service	6	0 confirmed (but 3 food workers were patrons)	Multiple items	Calicivirus	Ill food workers	Hennepin
Dec	Catered meeting at hotel	10	0	Buttermilk peppercorns dip	*Bacillus cereus**	Unknown	Ramsey
Dec	Party, banquet hall	18	0	Fresh veggie tray	Viral gastroenteritis*	Unknown	Kanabec
Dec	Elementary school	30	17	Self-serve items in cafeteria	*Shigella sonnei*	Poor handwashing	Becker

TOTAL: 39

* Epidemiologically defined agent

Confirmed Waterborne Outbreaks (Drinking Water and Recreational Water)
Minnesota, 2001

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	Contributing Factor	County
Jul	Swimming beach	77	2	Recreational water	Calicivirus	Contamination from ill children	Hennepin
Jul	Swimming beach	20	10	Recreational water	*E. coli* O157:H7	Likely contamination from diaper-age children	Hennepin
Sep	Church	4	0	Drinking water	Copper and other metals	Corroded water distribution piping	Douglas
Nov	Elementary school	28	0	Drinking water	Copper	Installation of improper scaling device on drinking fountain	Nobles

TOTAL: 4

Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 2001

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Jan	Nursing home	57	0	Person-to-person	Viral gastroenteritis*	Washington
Jan	Nursing home	28	1	Person-to-person	Calicivirus	Ramsey
Jan	Nursing home	40	3	Person-to-person	Calicivirus	Scott
Jan	Nursing home	20	2	Person-to-person	Calicivirus	Hennepin
Jan	Daycare	2	2	Unknown	*Campylobacter jejuni*	Dakota
Jan	Daycare	2	2	Person-to-person	*Shigella sonnei*	Scott
Jan	Elementary school	26	22	Person-to-person	*Shigella sonnei*	Yellow Medicine
Jan	Nursing home	160	0	Person-to-person	Viral gastroenteritis*	Dakota
Jan	Daycare	2	2	Person-to-person	*Shigella sonnei*	Dakota
Jan	School	73	1	Person-to-person	Calicivirus	LeSueur
Jan	Daycare	20	2	Person-to-person	*Shigella sonnei*	Hennepin
Jan	Daycare	5	3	Person-to-person	*Shigella sonnei*	Redwood
Feb	Daycare	12	0	Person-to-person	Unknown	Clay

* Epidemiologically defined agent

Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 2001 (continued)

Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Mar	Nursing home	50	1	Person-to-person	Calicivirus	Beltrami
Mar	Group home	6	0	Person-to-person	Viral gastroenteritis*	Chisago
Apr	Daycare	6	4	Person-to-person	*Shigella sonnei*	Hennepin
Apr	Daycare	34	17	Person-to-person	*Shigella sonnei*	Dakota
Apr	Daycare	4	1	Person-to-person	*Shigella sonnei*	Blue Earth
Apr	Daycare	3	3	Person-to-person	*E. coli* O157:H7	Isanti
Apr	Daycare	20	0	Person-to-person	Viral gastroenteritis*	Anoka
May	Elementary school	13	1	Person-to-person	Calicivirus	Scott
May	Elementary schools	59	34	Owl pellets	*Salmonella* Typhimurium	Washington
May	Daycare	3	2	Person-to-person	*Shigella sonnei*	Yellow Medicine
May	Daycare	3	3	Person-to-person	*Shigella sonnei*	Hennepin
May	Daycare	8	4	Person-to-person	*Shigella sonnei*	Hennepin
May	Daycare	2	2	Person-to-person	*Salmonella* Oranienburg	Hennepin
Jun	Daycare	15	1	Person-to-person	Calicivirus	Hennepin
Jun	Day camp	25	14	Contact with calves	Multiple enteric pathogens	Ramsey

* Epidemiologically defined agent

Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 2001 (continued)

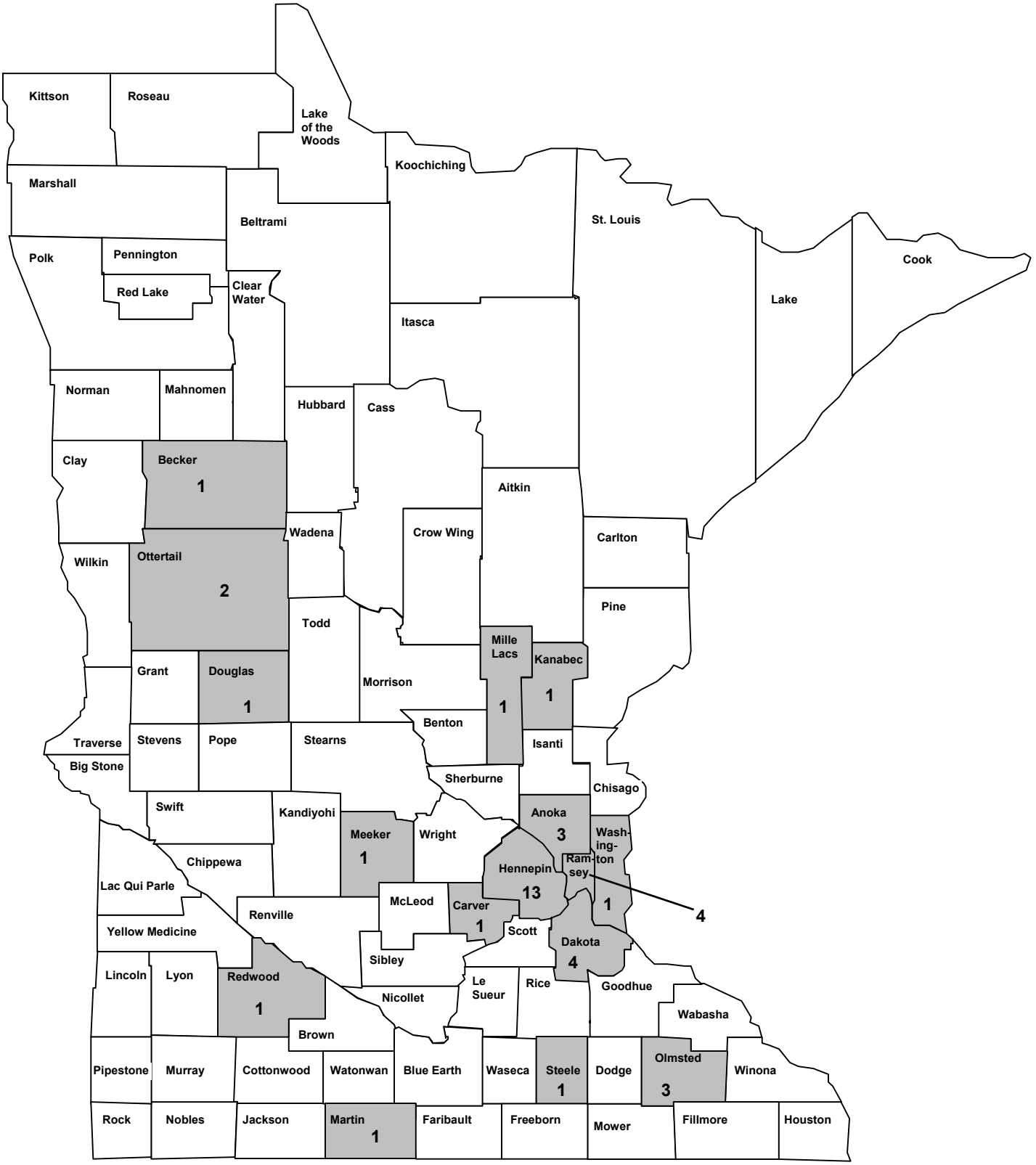
Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Jun	Daycare	4	2	Person-to-person	*Shigella sonnei*	Hennepin
Jul	Daycare	6	1	Person-to-person	*Shigella sonnei*	Hennepin
Jul	Daycare	9	3	Person-to-person	*E. coli* O157:H7	Hennepin
Jul	Daycare	8	2	Person-to-person	*Shigella sonnei*	Hennepin
Jul	Daycare	34	24	Person-to-person	*Shigella sonnei*	Hennepin
Jul	Daycare	2	2	Person-to-person	*Salmonella* Montevideo	Hennepin
Jul	Daycare	5	3	Person-to-person	*Salmonella* Typhimurium	Goodhue
Jul	Nursing home	14	3	Person-to-person	*Salmonella* Newport	Hennepin
Jul	Party, private home	2	2	Unknown	*Salmonella* Miami	Washington
Aug	Nursing home	12	3	Person-to-person	*Salmonella* Newport	Hennepin
Aug	Daycare	26	12	Person-to-person	*Shigella sonnei*	Hennepin
Aug	Daycare	2	2	Person-to-person	*Cryptosporidium parvum*	Wabasha
Aug	Daycare	8	1	Unknown	*Giardia lamblia*	Washington
Aug	Daycare/shelter	11	0	Person-to-person	Unknown	Hennepin
Sep	Preschool	27	27	Person-to-person	*E. coli* O157 :H7	Hennepin

Non-Foodborne, Non-Waterborne Gastroenteritis Outbreaks
Minnesota, 2001 (continued)

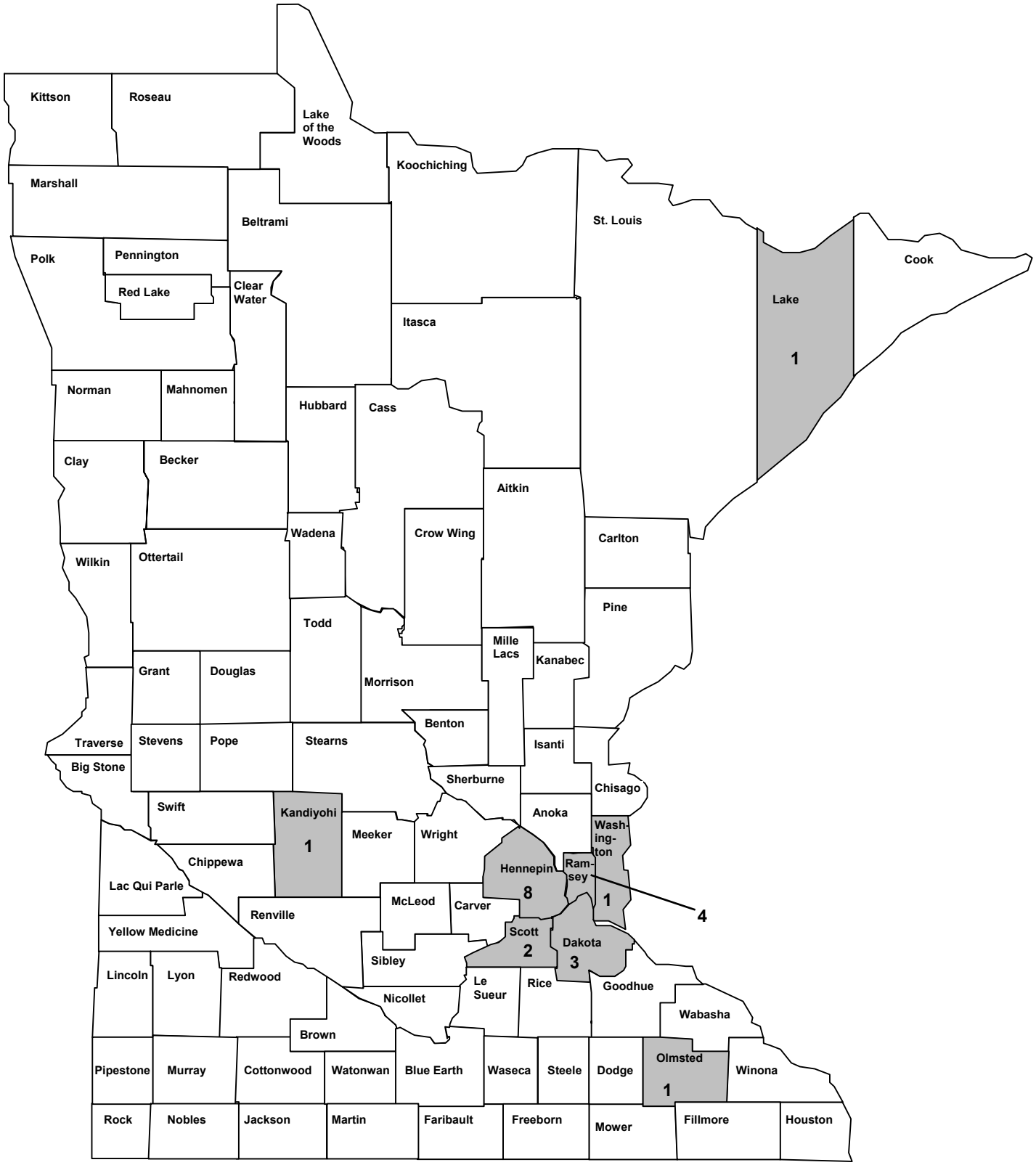
Month	Setting	No. Cases	No. Laboratory-Confirmed	Vehicle	Agent	County
Sep	Elementary school	6	6	Person-to-person	*Shigella sonnei*	Red Lake
Oct	Daycare	38	23	Person-to-person	*Shigella sonnei*	Sherburne
Nov	Elementary school	4	2	Person-to-person	*Shigella sonnei*	Cass
Nov	Elementary school	10	7	Person-to-person	*Shigella sonnei*	Itasca

TOTAL: 47

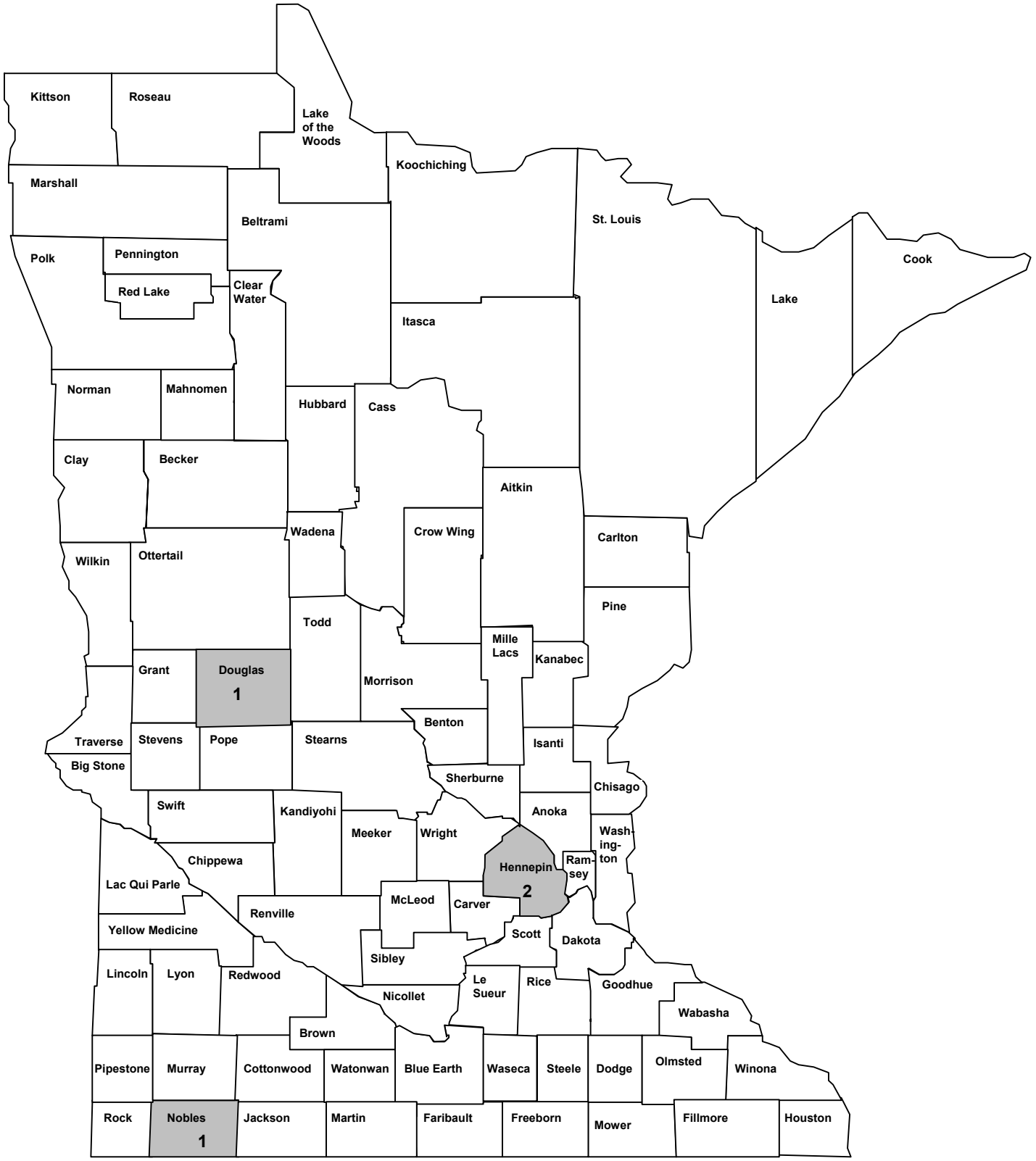
Confirmed Foodborne Outbreaks by County, Minnesota, 2001 (n=39)



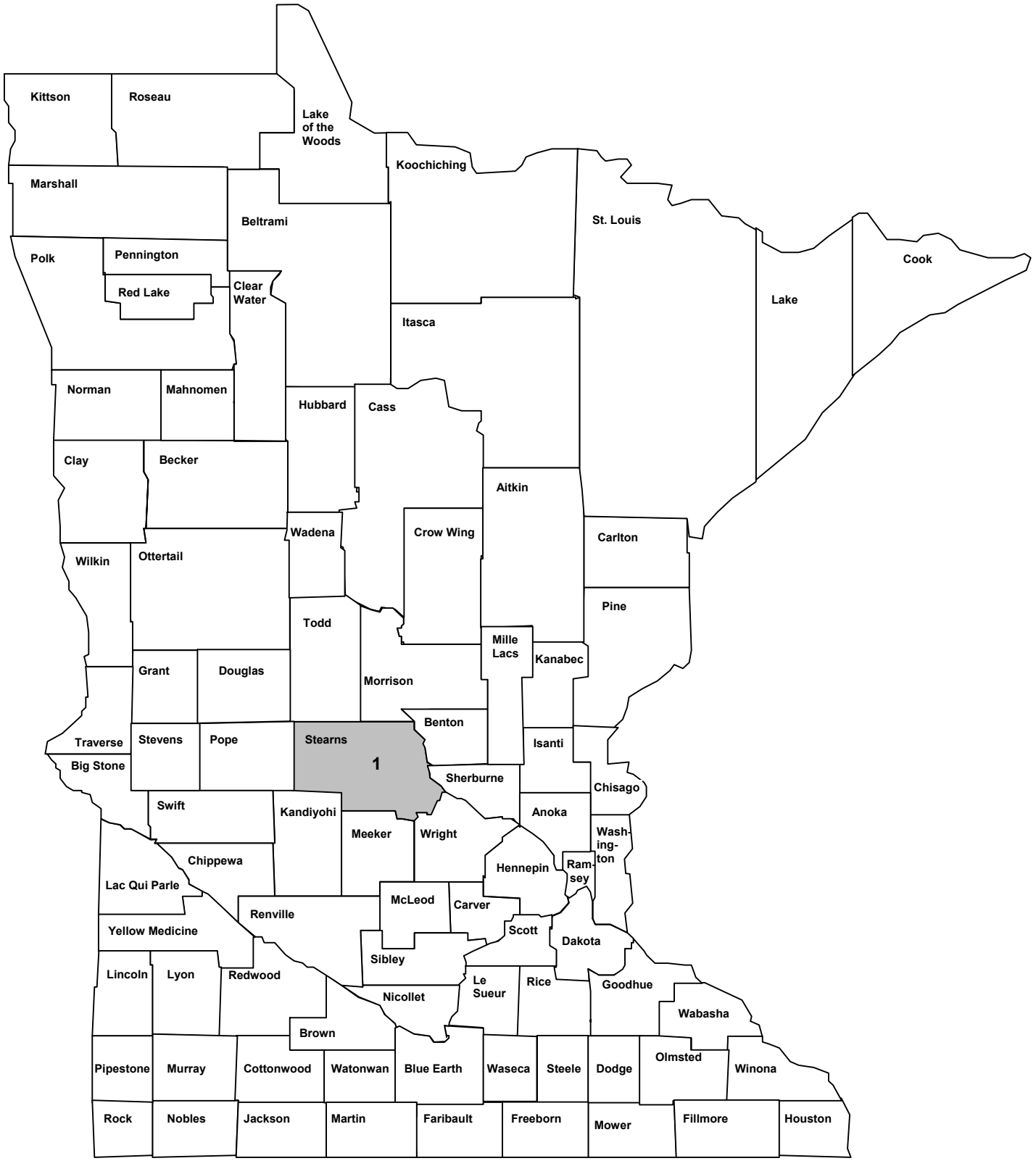
Probable Foodborne Outbreaks by County, Minnesota, 2001 (n=21)



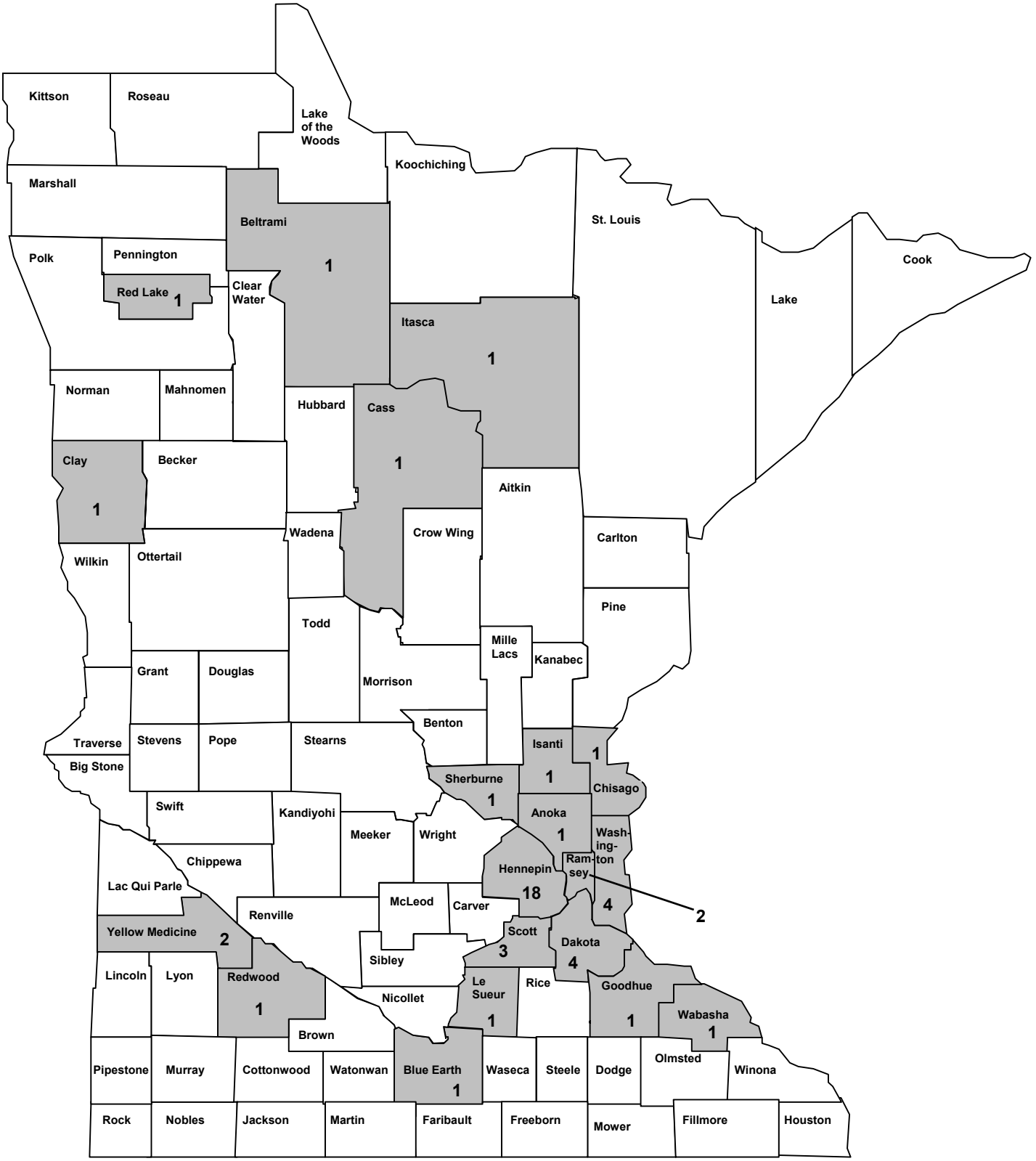
Confirmed Waterborne Outbreaks by County, Minnesota, 2001 (n=4)



Probable Waterborne Outbreaks by County, Minnesota, 2001 (n=1)



Non-Foodborne, Non-Waterborne
Gastroenteritis Outbreaks by County, Minnesota, 2001 (n=47)



Foodborne Illness Complaints
Minnesota, 2001

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	0	0	0
Anoka County	24	8	32
* Becker County	2	0	2
* Beltrami County	0	0	0
* Benton County	0	0	0
Big Stone County	0	0	0
Bloomington, City of	28	45	73
* Blue Earth County	7	0	7
Brooklyn Park, City of	6	0	6
Brown County	5	0	5
* Carlton County	0	0	0
+ Carver County	7	0	7
Cass County	0	0	0
Chippewa County	1	0	1
+ Chisago County	1	0	1
Clay County	2	0	2
* Clearwater County	0	0	0
Cook County	0	0	0
Cottonwood County	1	0	1
* Crow Wing County	3	0	3
Crystal, City of	3	0	3
+ Dakota County	67	0	67
* Dodge County	0	0	0
Douglas County	1	0	1

Foodborne Illness Complaints
Minnesota, 2001

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	1	0	1
Edina, City of	9	2	11
Faribault County	0	0	0
* Fillmore County	1	0	1
* Freeborn County	0	0	0
Golden Valley, City of	6	0	6
Goodhue County	1	2	3
* Grant County	0	0	0
Hennepin County	43	23	66
Hopkins, City of	4	0	4
* Houston County	1	0	1
* Hubbard County	0	0	0
+ Isanti County	0	0	0
* Itasca County	1	0	1
* Jackson County	0	0	0
* Kanabec County	3	0	3
Kandiyohi County	5	0	5
* Kittson County	0	0	0
* Koochiching County	0	0	0
Lac Qui Parle County	0	0	0
Lake County	0	0	0
* Lake of the Woods County	0	0	0
Le Sueur County	0	1	1
Lincoln County	0	0	0

Foodborne Illness Complaints
Minnesota, 2001

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
* Lyon County	1	0	1
* Mahnomen County	0	0	0
Maplewood, City of	14	0	14
* Marshall County	0	0	0
Martin County	0	0	0
* McLeod County	1	0	1
* Meeker County	1	0	1
* Mille Lacs County	2	0	2
Minneapolis, City of	79	83	162
Minnetonka, City of	6	0	6
Moorhead, City of	2	0	2
Morrison County	0	0	0
* Mower County	5	0	5
Murray County	0	0	0
New Brighton, City of	2	0	2
Nicollet County	1	0	1
Nobles County	1	0	1
* Norman County	0	0	0
Olmsted County	4	60	64
* Otter Tail County	2	0	2
* Pennington County	0	0	0
+ Pine County	2	0	2
Pipestone County	0	0	0
* Polk County	2	0	2
Pope County	0	0	0

Foodborne Illness Complaints
Minnesota, 2001

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Ramsey County	45	10	55
* Red Lake County	0	0	0
Redwood County	0	0	0
* Renville County	2	0	2
* Rice County	2	0	2
Richfield, City of	4	0	4
Rock County	1	0	1
* Roseau County	0	0	0
St. Cloud, City of	2	0	2
St. Louis County	4	14	18
St. Louis Park, City of	12	12	24
St. Paul, City of	66	0	66
+ Scott County	7	0	7
* Sherburne County	3	0	3
* Sibley County	0	0	0
Stearns County	2	4	6
* Steele County	4	0	4
Swift County	0	0	0
* Stevens County	0	0	0
Swift County	0	0	0
Todd County	1	0	1
* Traverse County	0	0	0
Wabasha County	0	0	0
Wadena County	1	0	1
Waseca County	0	0	0

Foodborne Illness Complaints
Minnesota, 2001

City or County	Foodborne Illness Complaints Faxed From MDH To City or County	Foodborne Illness Complaints Received By MDH From City or County	Total
Washington County	34	13	47
Watonwan County	0	0	0
Wayzata, City of	4	1	5
Wilkin County	0	0	0
Winona County	0	1	1
+ Wright County	7	0	7
Yellow Medicine County	0	0	0
Bureau of Indian Affairs	2	0	2
Food and Drug Administration	2	0	2
Minnesota Department of Agriculture	49	3	52
University of Minnesota	0	0	0
United States Department of Agriculture	9	0	9
TOTAL	**621**	**284**	**905**

* complaint faxed to an MDH District Office (n=43)

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

In 2001, the MDH Acute Disease Investigation and Control Section (ADIC) received 493 foodborne illness complaints 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 493 complaints received by ADIC resulted in 621 faxes sent to environmental healths staff or local agencies. In addition, ADIC received 284 foodborne illness complaints forwarded from other public health agencies.

FOODBORNE ILLNESS COMPLAINT FORM
Foodborne Illness Report
Minnesota Department of Health
Phone: (612) 676-5414 Fax: (612) 676-5730

Stool kit delivered ☐
Daily ☐

Complaint date: ___/___/___ Tennessen: ☐ Reporter: _____

Agency: _____ Phone:_____ Fax: _____

First Name:_____ Last Name: _____ Age: _____ ☐ Female ☐ Male

Address _____ Zip: _____

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

Occupation: _____ Daycare exposure: Yes No

Illness History:

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:_____

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** 9 MDA Follow-up requested

9 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
Acute Disease Investigation and Control Section
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 diseases, 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 outbreak surveillance. 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

Tennessen Statements

The Tennessen 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

Patient 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 to 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) median incubation period of 24-48 hours, and
2) vomiting in at least 50% of cases or vomiting more frequent than fever, and
3) median duration $\leq$ 2 days

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

1) fever and/or bloody stools
2) median duration > 2 days
3) median incubation period of 3 days or more (some bacterial pathogens, e.g., *Salmonella*, can have a shorter median incubation)

II. Investigation at the Food Service Establishment

1) When interviewing food workers, Tennessen 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 diarrhea ($\geq$ 3 loose stools in a 24-hour period)
- Percentage of interviewed cases with vomiting
- Percentage of interviewed cases with cramps
- Percentage of interviewed cases with fever
- Percentage of interviewed cases with bloody stools
- 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

Tennessen: Y N
Date:_____
Interviewer: _____

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

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
_____	____	____/____/____
_____	____	____/____/____
_____	____	____/____/____