

Foodborne Illness Surveillance and Investigation  
Annual Report, Florida, 1997



Bureau of Environmental Epidemiology  
Division of Environmental Health  
Department of Health

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## **Overview**

The 1997 year was a very active year for food and waterborne outbreak reporting and investigation. A total of 439 outbreaks with 2,744 cases was reported, compared to 305 outbreaks and 2,777 cases for 1996, and 296 outbreaks and 2,908 cases for 1995. Investigators were able to laboratory confirm 55 of the outbreaks (including 6 *V. vulnificus*) associated with 840 cases. Staphylococcus was identified in the largest percentage of the total reported outbreaks (12.1%). Norwalk was identified in the largest percentage of cases in total reported outbreaks (30.7%) followed by Staphylococcus (11.5%). Restaurants were the source site in 75.8% of the outbreaks reported and in 55.9% of the cases. Beef and shellfish were the vehicle for 11.2% of the outbreaks respectively. Shellfish was the vehicle for 12.9% of the cases in reported outbreaks (probably due to the large interstate outbreak in January). The month with the largest percentage of outbreaks reported was April (12.6%) with the largest percentage of cases (14.0%) reported in January. Large (greater than 10 cases) outbreaks accounted for 11.4% (50) of the total reported outbreaks and 56.7% (1557) of the total cases. Selected significant outbreaks are briefly described below. As of this year, contributing factors are now tracked as shown in Table 18 and Figure 10. Each outbreak can have up to three factors under the current surveillance system. There are also categories for none reported, other and unknown. Aside from unknown and none reported, the six most frequent contributing factors are as follows:

**Table 1: Six Most Prevalent Contributing Factors in Foodborne Outbreaks, Florida 1997**

<b>Contributing Factor</b>	<b># Outbreaks</b>	<b># Cases</b>
Inadequate refrigeration	87	543
Cross contamination	64	557
Unclean equipment	61	393
Inadequate hot-holding	52	324
Hand contact with implicated food	35	139
Infected person	27	482

## **Outbreak Definitions**

**Foodborne illness outbreak:** An outbreak is an incident in which two or more persons have the same disease, have similar symptoms, or excrete the same pathogens; and there is a time, place, and/or person association between these persons. A foodborne disease outbreak is one in which a common food has been ingested by such persons. Nevertheless, a single case of suspected botulism, mushroom poisoning, ciguatera or paralytic shellfish poisoning, other rare disease, or a case of a disease that can be definitely related to ingestion of a food, can be considered as an incident of foodborne illness and warrants further investigation.

**Confirmed outbreak:** A confirmed foodborne outbreak is an outbreak that has been thoroughly investigated and the results include strong epidemiological association of a food item or meal with illness. A thorough investigation is documented by

- diligent case finding,
- interviewing of ill cases as well as well individuals,
- collecting clinical and food lab samples where appropriate and available,

- confirmation of lab samples where possible,
- field investigation of the establishment(s) concerned, and
- statistical analysis of the information collected during the investigation.

The summary report of all of the information collected in an investigation in a confirmed outbreak will indicate a strong association with a particular food and/or etiologic agent and a group of two or more people, or single incidents as described above.

Suspected outbreak: A suspected foodborne outbreak is one for which the sum of the epidemiological evidence is not strong enough to consider it a confirmed outbreak.

### **Training and Continuing Education**

In 1997, the Food and Waterborne Disease section offered 60 training sessions within the Department of Health and 47 training and continuing education sessions to groups outside the department. Training topics within the Department of Health include selected aspects and procedures of food and waterborne disease investigations, how to use Epi Info software, guidelines for laboratory sampling and testing, foodborne illness investigations and Hazard Analysis and Critical Control Point (HACCP) procedures, microbial contamination of water supplies, and aspects of specific pathogens (hepatitis A, ciguatera, salmonella, cyclospora, cryptosporidium). Staff reached within the Department of Health include environmental health professionals, nurses, epidemiologists, and laboratory staff. Training and continuing education outside the department included regular updates on foodborne illness outbreaks in Florida, in-depth presentations on specific outbreaks (viral gastroenteritis in a correctional facility, foodborne illness from produce), and overviews of foodborne illness investigation procedures in Florida. Groups reached outside the department include other state agencies (Department of Business and Professional Regulation, Department of Agriculture and Consumer Services, Department of Environmental Protection), professional associations (Florida Environmental Health Association, registered dietitians, chefs, county extension agents), industry groups (produce growers, county jail staff) and university students (Florida Agricultural and Mechanical University, University of Florida and University of Miami).

### **Selected Foodborne Outbreaks**

#### **Interstate Oyster Outbreak: Norwalk Virus From Louisiana Oysters, January, 1997**

On Friday afternoon, January 3, the Bureau of Environmental Epidemiology received a phone call from the Escambia County Health Department (Pensacola) describing unusual numbers of gastroenteritis following the ingestion of raw oysters (12/25 - 8 cases; 12/28 - 7 cases). On Saturday, January 4, the Jackson County Health Department (Marianna) also called to report 14 persons ill. All had attended a New Year's Eve party and had eaten Louisiana oysters. The onset time varied from 12 to 48 hours. The duration was 10 to 40 hours. The attack rate appeared to be fairly high. In Jackson County, of 23 persons who attended the party; seven did not eat oysters and did not become ill, two ate oysters and did not become ill, 14 ate oysters and became ill. Anecdotal evidence indicates similar attack rates in the other counties. All of the

implicated oysters came from Louisiana. All cases had eaten raw oysters within 3 days of their illness. A case was defined as a person with vomiting or diarrhea for over 24 hours who had consumed Louisiana oysters harvested between December 15, 1996 and January 3, 1997.

Florida eventually identified 279 cases of illness associated with ingestion of raw Louisiana oysters. Louisiana had 179 persons that met the case definition, Georgia had 7 persons, Alabama had 12, and Mississippi had 14. A total of 17 Florida counties (Alachua, Brevard, Citrus, Columbia, Duval, Escambia, Flagler, Hillsborough, Jackson, Leon, Marion, Orange, Pinellas, Santa Rosa, Sarasota, Seminole, and Suwanee) reported cases of illness from ingestion of raw Louisiana oysters. Escambia County reported the most cases (193).

Small round-structured viruses (SRSVs) which include both Norwalk and Norwalk-like viruses were found at the Centers for Disease Control and Prevention by electron microscopy in 8 of 11 ill persons. The laboratory findings suggest that at least three strains of SRSVs caused this outbreak and support the hypothesis that the source may have been multiple waterways contaminated by raw sewage from one or more harvesters. In addition, individual shellfish were dissected and the oysters' digestive tracts were processed to recover viruses. A total of three shellfish were positive for SRSVs, each from a different sample. In addition, the samples were tested for the toxins associated with red tide, but were found to be negative.

Norwalk-like viruses, the leading cause of nonbacterial gastroenteritis in the U.S., are a group of closely related RNA viruses also known as SRSVs. They cause diarrhea and vomiting, with occasional low-grade fever, lasting one to two days. Transmission is

- by person-to-person contact,
- by fecal contamination of food, recreational and drinking water, ice, and
- possibly via aerosolized vomit and
- contact with soiled linen and other articles.

Person-to-person transmission usually accompanies foodborne outbreaks. Although the illness is usually self-limiting, the associated dehydration can be life-threatening in the elderly or debilitated.

Three similar outbreaks have been associated with Louisiana oysters since the 1970's: 1982 (400+ cases), November 1993 (45 cases), and February 1996 (23 cases). Similar outbreaks associated with Florida oysters occurred in 1980 (13 cases), 1993 (45 cases), and 1995 right after New Year's (139 cases).

This investigation demonstrated several limitations in both the current sewage disposal mechanism for oyster harvest vessels and the oyster tagging system designed to reduce the number and magnitude of oyster-associated gastroenteritis outbreaks. Oyster-related outbreaks of viral gastroenteritis will likely continue to occur unless seafood regulators and the oyster industry develop and enforce control measures to prevent overboard discharge of sewage from oyster-harvesting boats. This investigation highlights the need to further explore the interaction between harvesting practices, environmental conditions, oysters, and Norwalk virus.<sup>1</sup>

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<sup>1</sup> See also: Déjà vu: Another New Year's Oyster Outbreak, Florida Journal of Environmental Health, 158:30, June, 1997; Viral Gastroenteritis Associated With Eating Oysters – Louisiana – December 1996 – January 1997, Morbidity and Mortality Weekly Report, 46(47):1109–1112.

## **SRSV at a Religious Celebration, Broward County, January 1997**

On January 6, 1997, the Broward County Health Department was notified of a potential foodborne outbreak involving 120 individuals attending a catered religious celebration on January 4, 1997. The celebration consisted of two catered events serviced by two different caterers. During the interviewing process it was revealed that a third dinner party attended by approximately 24 guests was held at a Chinese restaurant on Friday, January 3, 1997.

The owner/operators of the catering companies were interviewed to review menu items served along with preparation procedures. The Department of Business and Professional Regulation and the Broward County Health Department were each responsible for one of the catering facilities. According to both operators, they were not aware of any illness among their respective employees. The findings at the time of the environmental investigation did not reveal any temperature abuse of foods or deficiencies in food handling procedures.

A questionnaire was developed and administered to 77 guests and five staff members. A case was defined as any attendee that became ill with nausea, diarrhea, or vomiting and at least one of the following symptoms, cramps, fatigue, fever, within three days of the event. The hosts and the attendees were queried regarding

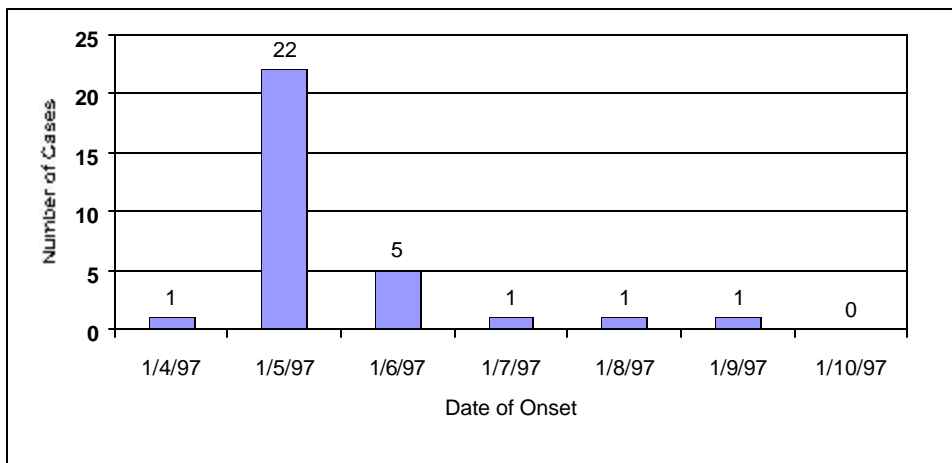
- their state of health prior to the attendance at this event,
- any other events that they attended in common with other attendees,
- what foods they ate,
- if they were ill,
- what symptoms they experienced,
- date of onset,
- duration, and
- if they were associated with anyone that had experienced similar symptoms.

Seventy-seven (64%) of the 120 listed guests were interviewed and five (5) catering employees were interviewed. Of the guests interviewed, 31 (40%) met the case definition of the outbreak (37 reported being ill). None of the interviewed employees met the case definition, although one of the positive SRSV stools was from an employee. Among the cases, the mean incubation period was 24 hours (range <24 to 96 hours); and the duration of illness was 24 to 48 hours (range of <24 to 96 hours). The mean age among the cases was 46 years. Gender distribution among the cases was 14 females and 17 males. Thirty-one (40%) of respondents were ill with symptoms of nausea (90%), fatigue (93%), diarrhea (84%), cramps (74%), vomiting (50%), and fever (17%).

Food-specific attack rates were determined for all menu items served at both catered events of January 4, 1997. Exposure to the whitefish salad doubled the risk of illness. No other food specific attack rates were statistically significant. Information regarding menu items and exposure at the Chinese dinner was not gathered and its possible significance was not apparent until well into the investigation. Preliminary laboratory reports were indicative of non-bacterial pathogens and given the time lapse, an extended investigation into the Chinese dinner menu was not undertaken and probably would not have provided any clearer insight into the mode of transmission, as all three events are implicated as possible source(s) of exposure. The epidemic curve of the

illness as shown in the following chart clearly indicates a common source outbreak occurred on January 5.

**Figure 1: Epidemic Curve of Viral Gastroenteritis, Broward County, January 1997**



Eleven (11) stool sample results were negative for bacterial pathogens. Three food items were submitted for testing, and all were negative for bacterial pathogens. On January 28, the Centers for Disease Control and Prevention confirmed the presence of SRSVs in four of six stool specimens examined by electron microscopy. There were no hospitalizations or deaths associated with the outbreak.

The symptomatology, incubation, and duration of illness are consistent with a Norwalk-like viral gastroenteritis. Cases of January 8 and 9 were most likely secondary cases. Exposure at the Friday night dinner and illness manifestation on January 5 still falls within the incubation range of the agent. Attendance at the 1:30pm ceremony on January 4, was strongly associated with illness with 31 of 55 attendees who became ill. Four of the 31 cases attended only the cocktail and dinner event. There was a three-fold increase in the risk of becoming ill associated with attendance at the 1:30pm ceremony. Review of the menu items served at the 1:30pm ceremony revealed that all food items were served cold and required no further preparation or heating process before ingestion. Among the foods served, the whitefish salad was most notable. Those who consumed the whitefish salad doubled their risk of becoming ill.

Given the incubation range of Norwalk-like viral gastroenteritis of 10 to 50 hours, and the outbreak peak on January 5, the likely points of exposure could have been as recent at the evening event of January 4 (in particular for the four cases that attended only the evening event) or as far back as 48-50 hours, which would be inclusive of exposure during the Chinese dinner. In conclusion, this outbreak was an SRSV-associated outbreak of viral gastroenteritis of undetermined source with the mode of transmission most likely foodborne.



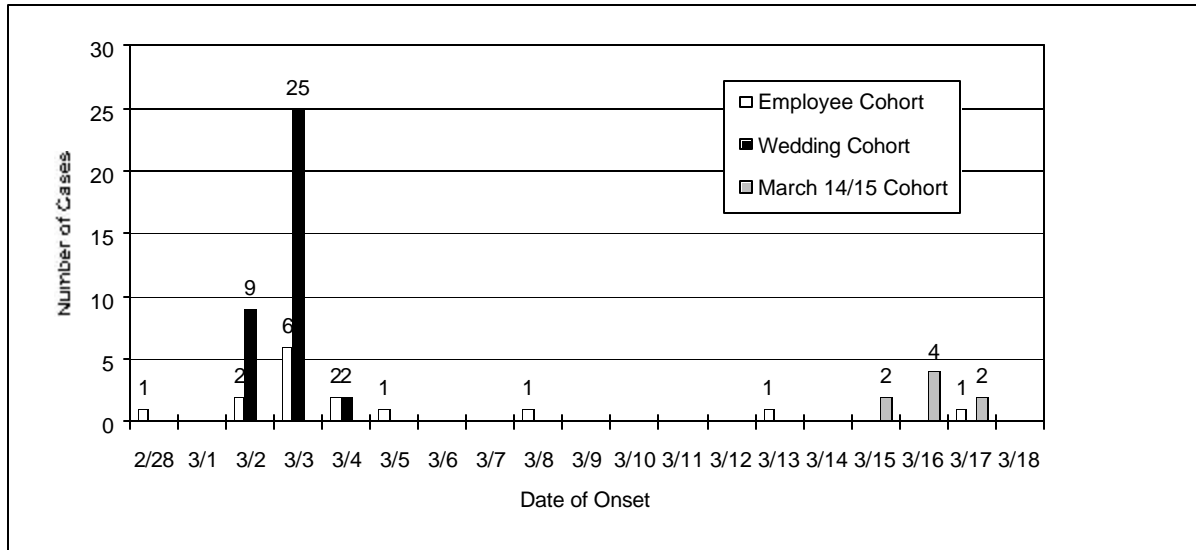
## **Norwalk Virus and Food Handlers in Seminole County, March 1997**

In the month of March, the Seminole County Health Department investigated two foodborne illness outbreaks in the same food service facility that occurred two weeks apart. The first outbreak was associated with a wedding event while the second transpired over two evenings involving two groups of people. Initially, a total of 36 (62.1%) of 58 people became ill following a wedding reception at the food service facility on March 1, 1997. Predominant symptomatology reported included nausea (92.3%), diarrhea (82.1%), and vomiting (66.7%). Fever was reported in 19 (48.7%) of the cases with a mean temperature of 101.0°F. Duration of illness was reported to range from 1 to 120 hours with a mean of 50.7 hours, median of 48 hours, and mode of 24 hours. The reported incubation period ranged from 9.25 to 71.25 hours with a mean of 33.84 hours and a median of 33.25 hours. Physician care was sought by 5 (13.2%) of the cases with 2 (5.3%) visiting emergency rooms. The single fecal specimen collected was found to be negative for Salmonella, Shigella, Campylobacter, and Staphylococcus.

Two weeks later on March 14 and March 15, the second outbreak consisted of eight people who were a part of two separate groups. The groups experienced gastrointestinal illness following consuming food at the same restaurant. The March 14 group was comprised of 5 people and the March 15 group included 4 people who ate together. The incubation period ranged from 20 to 33 hours with a mean of 26 hours. Predominant symptomatology reported included nausea (100.00%), diarrhea (75.0%), and vomiting (75.0%). Fever (25.0%), dizziness (25.0%), muscle aches (12.5%), fatigue (37.5%), and chills (37.5%) were other symptoms described. Duration of illness was reported to range from 12 to 120 hours with a mean of 24 hours.

A total of 18 (39.1%) of 46 employees who worked at the implicated food service facility reported gastrointestinal illness with onsets from February 28 through March 17, 1997. Gastrointestinal illness in household contacts during this period of time was reported by 8 (17.4%) of the employees. One employee who reported illness on February 28 was the chef who prepared all food for the wedding reception on March 1, 1997. Symptoms he experienced on February 28 and March 1 were described as nausea and "did not feel well." Symptoms reported by the employees were nausea (70.6%), vomiting (64.7%), diarrhea (52.9%), fever (41.2%), abdominal cramps (29.4%), chills (23.5%), and cold/sweats (5.9%). The mean temperature of the fever was reported as 100.5°F. Duration of the illness for the employees ranged from 2 to 48 hours with a mean of 31.1 hours, median of 30 hours, and a mode of 48 hours. Figure 2, depicts the days of onset of the two cohorts and the employees.

**Figure 2: Number of Cases by Date of Onset, Seminole County, March 1997**



The incubation periods, high attack rates, duration of the illness and the described symptoms of low grade fever, chills, lethargy, weakness, and headache in addition to the high prevalence of diarrhea and vomiting are consistent with confirmed outbreaks caused by the Norwalk-like virus. The reported similar illness among household members is also characteristic of this virus. The absence of enteric pathogenic bacteria in the fecal sample indicates a viral etiology.

Epidemiological data did not indicate a statistically significant association with a single food item as a vehicle of transmission in either outbreak. This could be due to the limited choice of food items, sampling technique, or a statistically small cohort. There is also a strong possibility that multiple-food items were involved in transmitting the causative agent in all three outbreak clusters. The preparation of all food items for the wedding reception was performed by a single person who exhibited symptoms of illness similar to those involved in the outbreak. It is therefore possible that multiple food items which were highly handled and not subsequently heated were inoculated with an infectious dose. The infectious dose of the Norwalk-like virus is thought to be less than 10 organisms. There is strong evidence showing that the Norwalk-like virus can be shed up to 72 hours following onset of symptoms and growing evidence that this virus can be shed 24 hours prior to expression of symptoms.

The high attack rate of nearly identical gastrointestinal illness among the employees of the food service facility for a two-week period of time during the last week of February and the first two weeks of March indicates that the agent was present and circulating in the food service facility. The agent was most likely introduced to an employee or employees of the restaurant via a community-acquired case of illness and was transmitted among the employees. The presence of ill or asymptomatic employees either by itself or in conjunction with a breach in personal hygiene practices probably caused the agent to be transmitted to the single or multiple food items. While it appears that the gastrointestinal illness among the food workers at this establishment had significantly decreased prior to the second clustering of gastrointestinal illness, there still

is a high degree of probability that the organism that was transmitted during the previous outbreak was still present in the kitchen population.

### **Cyclospora Outbreak and Mesclun Lettuce, Leon County 1997**

On April 15, 1997, a private lab in Tallahassee reported two cases of cyclospora. The Department of Health Bureau of Laboratories in Jacksonville later confirmed the cases. A preliminary investigation indicated both cases had eaten at the same restaurant in Tallahassee. Due to the emerging nature of this pathogen, the Bureau of Environmental Epidemiology requested epidemiologic assistance from the Centers for Disease Control and Prevention, April 20, 1997.

On March 19, the day implicated by the initial questionnaire, the restaurant served approximately 243 persons of whom 142 charged their meals. Of the 142 persons in the charge-card group, 89 (62.7%) were interviewed. A retrospective cohort study using charge card receipts was initiated. The case definition consisted of:

- 1) laboratory-confirmed case: plus one gastrointestinal symptom,
- 2) probable case: diarrhea ( $\geq 3$  loose stools in a 24-hour period) for  $\geq 3$  days,
- 3) possible case:  $\geq 5$  symptoms including  $\geq$  gastrointestinal symptom.

Seventy-five persons were in the cohort. The cohort had a median age of 44 years, 62.7% were female. Twenty-nine (29) persons met the case definition. The onset of illness occurred a median of 8 days after eating lunch at the restaurant (range 0-14 days).

Analytical epidemiology indicated consumption of mesclun greens correlated with cyclosporiasis. The relative risk associated with consumption of mesclun was 8.5 with a confidence interval of 2.8, 25.7 and a P value of  $< 0.001$ . The traceback indicated the mesclun originated from either a domestic farm or one of 2 farms in Peru. The local wholesaler was not able to conclusively state the source of the mesclun greens consumed at the local restaurant on the day of the outbreak.<sup>2</sup>

### ***Staphylococcus aureus* and Chicken Fajitas, Lee County, May 1997**

In Lee County, 7 people sought medical treatment after consuming chicken fajitas from a mobile food vendor on May 20, 1997. The Lee County Health Department interviewed approximately 15 people (ill and well) that consumed food from the mobile truck, and only those that ate the chicken fajitas became ill. Signs and symptoms were consistent with *Staphylococcus aureus* (nausea, vomiting, abdominal pain, diarrhea, sweating, chills and prostration). Onset of symptoms ranged from 30 minutes to 2.5 hours (median

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<sup>2</sup> See also: Outbreaks of Cyclosporiasis – United States – 1997, Morbidity and Mortality Weekly Report, 46(23): 521-523; Herwaldt, Barbara et al. An Outbreak in 1996 of Cyclosporiasis Associated With Imported Raspberries, The New England Journal of Medicine, May, 1997, 336:1548-1556; Outbreak of Cyclosporiasis, Northern Virginia – Washington, DC – Baltimore, Maryland, Metropolitan Area, Morbidity and Mortality Weekly Report, August 1, 1997, 46(30): 689-691.

2 hours), and lasted about 48 hours. A clinical (vomitus) sample and a portion of fajita tested positive for *Staphylococcus aureus* enterotoxin type A. Contributing factors to the outbreak include food obtained from an unapproved source and poor personal hygiene. The chicken fajitas were prepared in a private home, where a portion was consumed, and the next day placed on a "California" truck with an open steam table. The fajitas were assembled on the back of the truck. There was no ability to wash hands as no sinks were provided on the vehicle. Although the exact cause of contamination is unknown, other contributing factors to this outbreak could include time/temperature abuse, improper cooling, inadequate reheating, unclean equipment, and cross-contamination. The catering company and their mobile food vehicles were closed until all Department of Agriculture and Consumer Services and Department of Business and Professional Regulation requirements were met.

### **Ciguatera Cases in Broward County, June 1997**

In June 1997, the Broward County Health Department received two medical reports of diagnosed cases of ciguatera poisoning in two patients with symptoms consistent with ciguatera poisoning and recent food history of eating hog snapper. Additionally, two contemporaneous suspected cases were reported by two individuals calling in a foodborne complaint with food history of hog snapper and symptoms consistent with ciguatera poisoning. The four individuals experienced symptoms including abdominal cramping, diarrhea, nausea, dizziness, muscle aches, chills, sensitivity to cold, and headache within a median incubation period of 5 hours (range 2-8 hours).

The investigation and trace backs of the hog snapper revealed that there were two retail outlets involved. Both retail outlets bought hog snapper from the same local wholesaler. The lots of fish implicated in the poisoning were from a lot purchased on May 21, 1997, consisting of 707 pounds of hog snappers, and a second lot consisting of 999 pounds of hog snapper purchased on June 9, 1997. Both lots were bought by a local wholesaler from a single source, a fisherman who fishes the Dry Tortugas Bank in the southwestern tip of the Florida Keys. In all there was a cluster of 7 cases, including the above mentioned four cases, two anecdotal reports from the traceback investigation in Broward County, and one additional report to the FDA Boca Raton field office involving a Palm Beach County resident. All had food history of eating hog snapper with symptoms developing within the time frame suggestive of ciguatera poisoning. There was insufficient information available to conduct an investigation into all the reported cases. Despite an extensive traceback effort, no fish was found from the implicated lots for testing.

### **Staphylococcal Intoxication in St. Johns County, September 1997**

In September 1997, 18 persons experienced staphylococcal food poisoning after attending a retirement party. Seven of these persons sought medical treatment for their illness and two were hospitalized overnight. Ill persons reported nausea, vomiting, diarrhea, weakness, sweats, and chills as their primary symptoms. Onset of illness occurred at a mean of 3.4 hours after eating (range 1-7 hours); symptoms lasted a median of 24 hours (range 2-72 hours). Illness was strongly associated with eating ham (risk ratio=26.8 (95% confidence interval=3.8-189.6)). Leftover ham was analyzed and was positive for staphylococcal enterotoxin type A. Investigation of the outbreak found

that the 16-pound precooked, packaged ham had been baked, sliced while hot and stored in one small container the day prior to the party. The food preparer denied having any cuts, sores, or infected wounds. Cleaning methods of the slicer were inadequate and it was not properly sanitized. The storage of 16 pounds of hot sliced ham in one small container prevented rapid cooling of the ham and facilitated sufficient microbial growth and enterotoxin production to result in this outbreak of foodborne illness.<sup>3</sup>

### ***Staphylococcus aureus* in a Prep School, Palm Beach County, November 1997**

On November 13, 1997, the Palm Beach County Health Department was notified of a food-borne illness outbreak at the Boca Raton Preparatory School in Boca Raton, Florida. Four persons (3 students and 1 teacher) were admitted to the West Boca Medical Center and 3 others were seen at the emergency room and released following the lunch meal served on November 12. Two students and one adult admitted to the hospital submitted stool samples that were positive for *Staphylococcus aureus*. Symptoms included abdominal cramping, fatigue, headache, nausea, vomiting, dizziness, diarrhea, and chills. The epidemiological investigation initiated by the Division of Epidemiology and Disease Control of the Palm Beach County Health Department discovered 94 of 303 students (31%) were ill and 4 of 43 adults (9.3%) were ill. The school was only approved to use a licensed caterer. However, the suspected foods, macaroni with ground turkey sauce and macaroni with Alfredo sauce, were prepared at unapproved food service facilities by an uncertified food handler. A food sample of the macaroni and ground turkey sauce sent to the Department of Health's Bureau of Laboratories in Jacksonville tested positive for *Staphylococcus aureus* enterotoxin at > 300,000/gram and positive for *Staphylococcus aureus* enterotoxin type A. A sample of raw turkey meat from the same lot sent to the lab recovered no *Staphylococcus aureus* enterotoxin. Of those ill, 81.6% ate macaroni with turkey sauce, 39.8% of those ill ate macaroni with Alfredo sauce and 92.9% of those ill ate macaroni with turkey sauce and/or macaroni with Alfredo sauce (RR = 12.85 with 95% confidence limits of 6.14 < RR < 26.92).

### **Holiday Dinner Cyclospora, Orange County, December, 1997**

During the last days of 1997 and the first months of 1998, the Florida Department of Health Orange County Health Department investigated a multi-state cyclospora outbreak associated with a tourist attraction in central Florida. Initial information disclosed 4 cases of presumed cyclospora infection among approximately 20 persons in a group from New York and Pennsylvania who traveled to the Orlando area from Nov. 27 to Dec. 12. Several other people in this party were also reported to be ill. Nationwide case finding and surveillance efforts expanded the cohort to 38 people. There were 8 people with laboratory confirmed positive stools for cyclospora. A total of 12 of the 38 people had reported illness compatible with cyclospora. The cohort was comprised of four distinct groups of people. Group one consisted of 20 people from New York and Pennsylvania with 8 illnesses. Group two had 2 ill people in a group of 9 from New York and North Carolina. The third group from New York had 1 of 5 ill persons. The fourth group from New Hampshire and Massachusetts consisted of 4 people with one illness.

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<sup>3</sup> See also: Outbreak of Staphylococcal Food Poisoning Associated With Pre-cooked Ham – Florida – 1997, Morbidity and Mortality Weekly Report, 46(50):1189-1191.

None of the people from any of the four groups knew each other or had any other epidemiological associations.

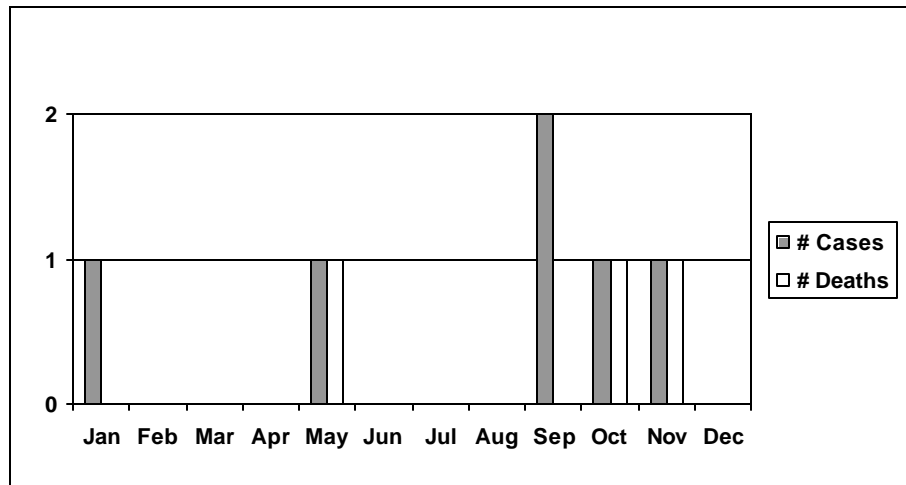
The epidemiological investigation of these 38 people shows that 100% consumed food at a dinner show located at a convention center located in central Florida on December 3, 1997. This dinner show was a temporary holiday event that served 400-700 people twice each night. The show ran from December 1 - 24, 1997. The meals were prepared in the convention center food service facility. Food items served included a relish tray consisting of cauliflower, broccoli, carrots, and celery with white creamy dressing or an apple vinaigrette dressing. For dessert there was a Yule log (a thin cake and frosting roll) or a raspberry fruit cup, or a strawberry fruit cup, or a melon fruit cup. The Yule log was offered to everybody. Apparently the fruit cups were offered to those who requested something other than the Yule log. The type of fruit cup offered depended on the time of the night it was. A leafy green salad was also served consisting of Romaine lettuce (broken into bite-size pieces), baby lettuce greens (spring mix, also known as mesclun lettuce), dried apricots, dried cherries, raisins, with cherry tomatoes on the side.

Statistical analysis of all the food products disclosed a significant association with the consumption of the leafy green salad and the cyclospora illness (OR=undefined; Uncorrected Chi-square=15.20 (p=0.000096)). An onsite investigation of the food service facility disclosed that the romaine lettuce in the leafy green salad was not added until December 6, 1997 in order to boost the volume of the salad. The dried fruit was consumed by only 2 of the ill people and was not considered to be significant. Since previous cyclospora outbreaks earlier in 1997 had implicated mesclun lettuce as a vehicle, the spring mix or baby lettuce greens became the focus of traceback activities. Preliminary information from the traceback disclosed a single distributor who supplied the warehouse servicing the convention center. This distributor, who was located in north Florida, was also a grower of spring mix lettuces. This distributor/grower also obtained spring mixes from two other distributors during the 10 days prior to the December 3 exposure period. As of this writing, information pertaining to the origins of the spring mixes served at the December 3 event is pending.

### ***Vibrio vulnificus***

For 1997, there were a total of 17 *Vibrio vulnificus* cases reported in the State of Florida. Of these, 11 were wound related. The other 6 cases were associated with consumption of raw oysters. There were five deaths reported from *Vibrio vulnificus* (2 wound related, 3 oyster related; See Figure 3 on the next page).

**Figure 3: *Vibrio vulnificus* Cases and Deaths Due to Shellfish Consumption by Month, Florida, 1997**



### Interstate Food Recalls

The State of Florida participated in two highly publicized interstate recalls in 1997, sliced frozen strawberries (March) and Hudson's hamburger patties (August). Frozen sliced strawberries were implicated in an outbreak of Hepatitis A in school children in Michigan. These strawberries from a packer/processor were supposedly USDA approved for the school lunch program. Strawberries from the same lot were shipped to distributors in five other states including Florida, though the north Florida distributor shipped strawberries only to a school district in Georgia. The FDA initiated a recall of frozen strawberries from the same time and packer/processor, but not the same lot from various school districts around the country. In Florida, the recall notice came through the Florida Department of Agriculture and consumer services. The strawberries were eventually found to originate from Mexico and therefore not USDA approved school lunch programs. While this recall generated a lot of public interest and concern, none of the implicated strawberries ever reached schools in Florida.<sup>4</sup>

The Hudson hamburger patty recall caused even more public concern as Hudson's patties were delivered to Sam's and Walmart stores around Florida as well as to other states. This recall was prompted by a 16 person outbreak of *E. coli* 0157:H7 in Colorado. Initially three lots were recalled. This was ultimately increased to 25 million pounds of hamburger. Several small clusters of Florida residents reported illness and were investigated as being possibly related to the nationwide recall. A coordinated effort between the Department of Agriculture and Consumer Services who collected and tested hamburger patties from implicated lots and the Department of Health who collected stools from ill persons found no individuals in Florida with *E. coli* 0157:H7 related to the recall, and no hamburger patties positive for the pathogen. Both recalls involved extensive interagency coordination and cooperation at the local, state and

<sup>4</sup> See also: HAV-Tainted Frozen Strawberries Top National News: Tale of the Outbreak, Hepatitis Control Report, 2(1):1-12, Spring 1997.

federal levels. In addition, the recalls involved an enormous effort of quick response, information sharing and public reassurance on the part of health officials.

**Table 2: Summary of Foodborne Illness Outbreaks Reported to Florida 1989 – 1997\***

<b>Year</b>	<b># Outbreaks</b>	<b># Cases</b>
1989	11	72
1990	7	314
1991	17	331
1992	40	1048
1993	136	890
<b>1994</b>	<b>258</b>	<b>1526</b>
<b>1995</b>	<b>296</b>	<b>2908</b>
<b>1996</b>	<b>305</b>	<b>2777</b>
<b>1997</b>	<b>439</b>	<b>2744</b>

\*The current surveillance and investigation program data began in 1994

**Table 3: Confirmed, Suspected and Total Outbreaks Reported to Florida, 1994 - 1997**

<b>1994</b>	<b># Outbreaks</b>	<b># Cases</b>
Suspected	201	719
Confirmed	57	807
<b>Total</b>	<b>258</b>	<b>1526</b>

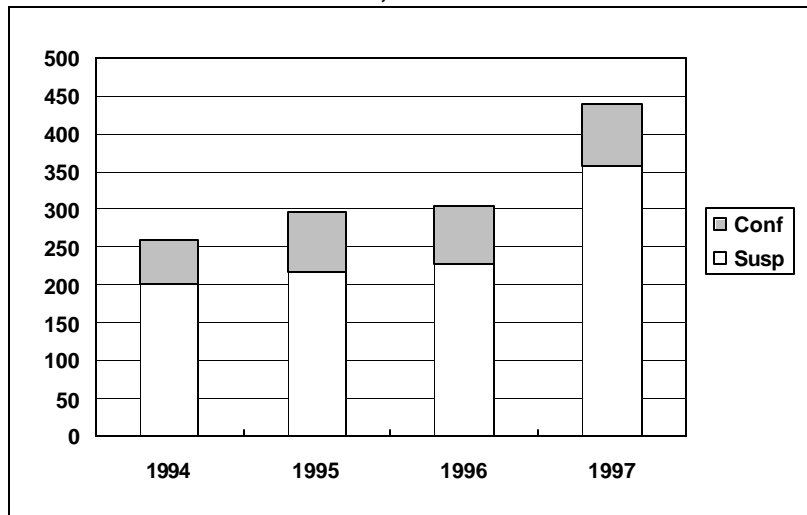
<b>1995</b>	<b># Outbreaks</b>	<b># Cases</b>
Suspected	216	783
Confirmed	80	2125
<b>Total</b>	<b>296</b>	<b>2908</b>

<b>1996</b>	<b># Outbreaks</b>	<b># Cases</b>
Suspected	226	759
Confirmed	79	2018
<b>Total</b>	<b>305</b>	<b>2777</b>

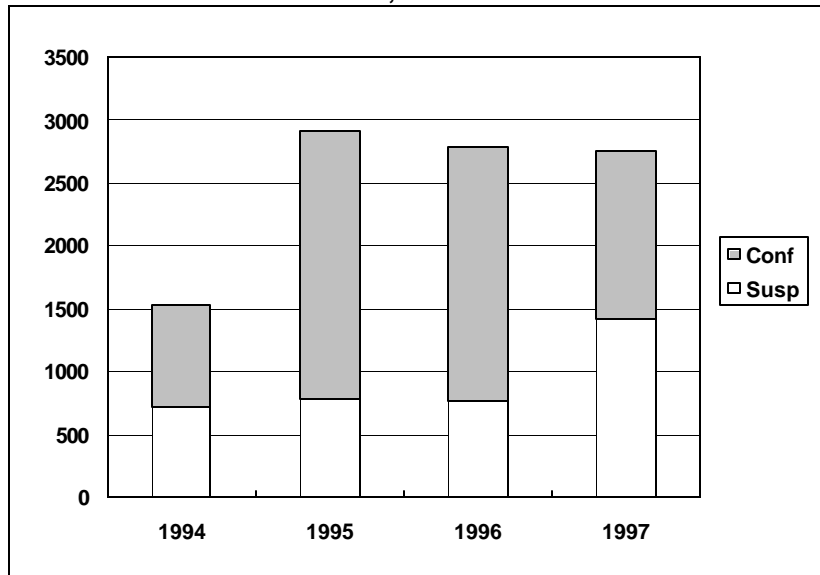
<b>1997</b>	<b># Outbreaks</b>	<b># Cases</b>
Suspected	357	1417
Confirmed	82	1327
<b>Total</b>	<b>439</b>	<b>2744</b>



**Figure 4: Number of Suspected and Confirmed Outbreaks by Year, Florida, 1994 - 1997**



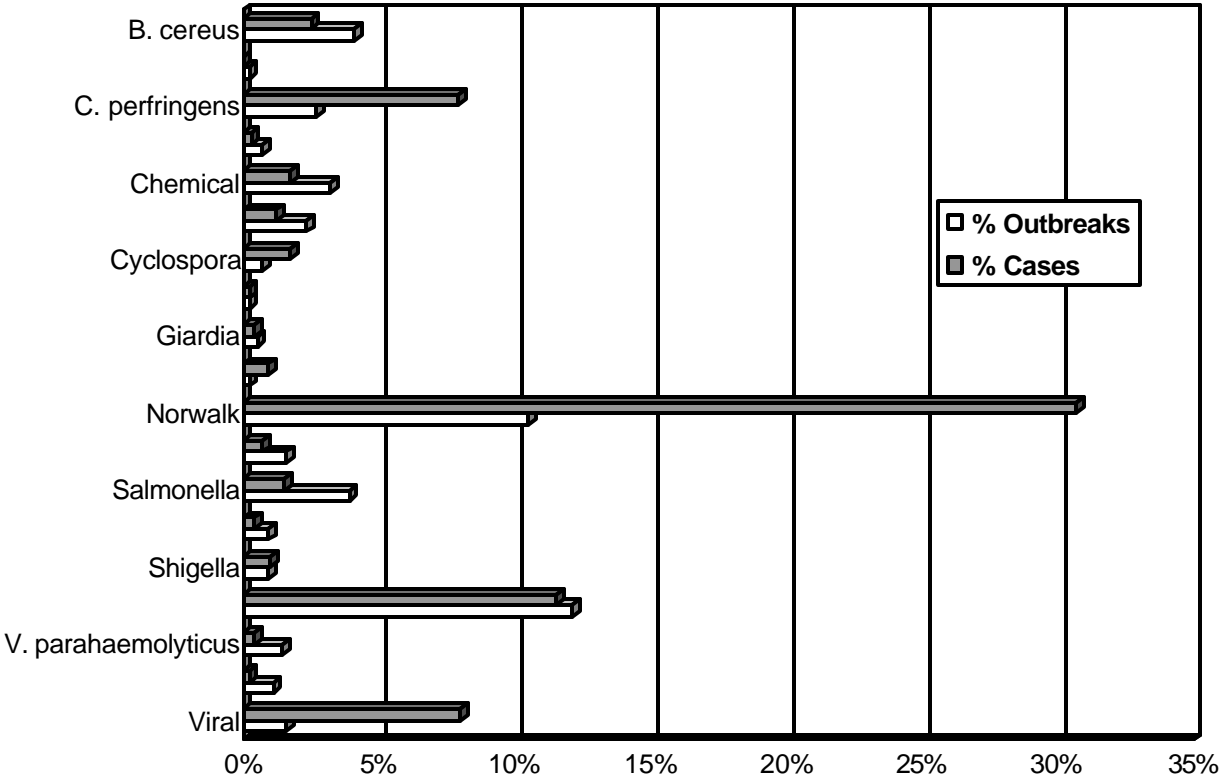
**Figure 5: Number of Cases for Suspected and Confirmed Outbreaks by Year, Florida, 1994 - 1997**



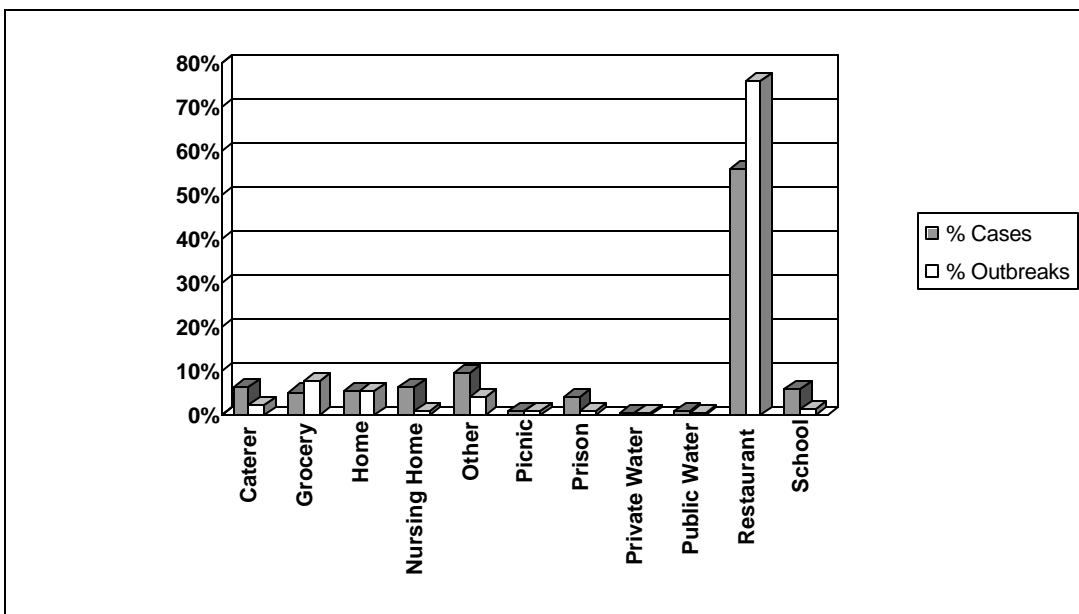
**Table 4: Number of Reported Outbreaks  
With Laboratory-Confirmed Etiologic Agents and Number of Cases Associated With These  
Outbreaks, Florida, 1997**

<b># Outbreaks</b>	<b>Agents</b>	<b># Cases</b>
4	B. cereus	33
1	C. botulinum	1
1	C. perfringens	130
2	Campylobacter	4
3	Chemical	22
3	Ciguatera	10
3	Cyclospora	48
1	E. coli 0157:H7	5
2	Giardia	10
1	Mushroom poisoning	1
8	Norwalk virus	370
4	Salmonella	9
3	Scombroid	8
4	Shigella	28
6	Staphylococcus	120
2	V. parahaemolyticus	4
6	V. vulnificus	6
1	Viral non-Norwalk	31
<b>55</b>	<b>Total</b>	<b>840</b>

**Figure 6: Percent Total Outbreaks and Cases by Etiologic Agent, Florida, 1997\***



**Figure 7: Percent Total Outbreaks and Cases by Site, Florida, 1997**



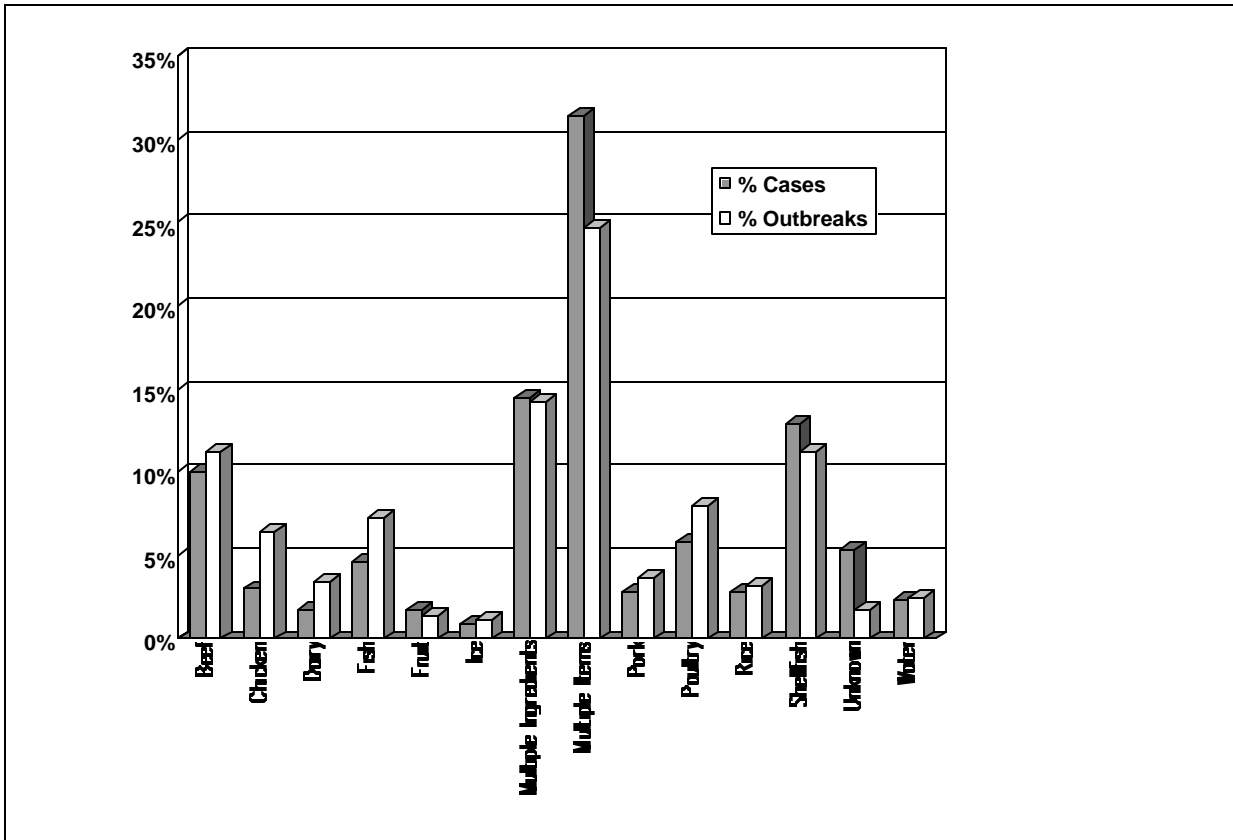
**Table 5: Outbreaks by Site, Florida, 1997**

Outbreak	Caterer	Grocery	Home	Nursing home	Other	Picnic	Prison	Private Water	Public Water	Restaurant	School	Total
<b>Confirmed</b>	6 (7.4%)	11 (13.6%)	10 (11.1%)	2 (2.5%)	4 (4.9%)					46 (56.8%)	3 (3.7%)	<b>82 (100%)</b>
<b>Suspected</b>	4 (1.1%)	24 (6.7%)	15 (4.2%)	1 (0.3%)	13 (3.6%)	3 (0.8%)	4 (1.1%)	2 (0.6%)	2 (0.6%)	286 (80.1%)	3 (0.8%)	<b>357 (100%)</b>
<b>Total</b>	<b>10 (2.3%)</b>	<b>35 (7.9%)</b>	<b>25 (5.5%)</b>	<b>3 (0.7%)</b>	<b>17 (3.9%)</b>	<b>3 (0.7%)</b>	<b>4 (0.9%)</b>	<b>2 (0.5%)</b>	<b>2 (0.5%)</b>	<b>332 (75.8%)</b>	<b>6 (1.4%)</b>	<b>439 (100%)</b>

**Table 6: Cases by Site, Florida, 1997**

Outbreak	Caterer	Grocery	Home	Nursing home	Other	Picnic	Prison	Private Water	Public Water	Restaurant	School	Total
<b>Confirmed</b>	126 (9.5%)	47 (3.5%)	61 (4.5%)	159 (12.0%)	157 (11.8%)					650 (49.0%)	127 (9.6%)	<b>1327 (100%)</b>
<b>Suspected</b>	44 (3.1%)	95 (6.7%)	85 (6.0%)	18 (1.3%)	102 (7.2%)	25 (1.8%)	108 (7.6%)	8 (0.6%)	18 (1.3%)	883 (62.3%)	31 (2.2%)	<b>1417 (100%)</b>
<b>Total</b>	<b>170 (6.2%)</b>	<b>142 (5.2%)</b>	<b>146 (5.3%)</b>	<b>177 (6.5%)</b>	<b>259 (9.4%)</b>	<b>25 (0.9%)</b>	<b>108 (3.9%)</b>	<b>8 (0.3%)</b>	<b>18 (0.7%)</b>	<b>1533 (55.9%)</b>	<b>158 (5.8%)</b>	<b>2744 (100%)</b>

**Figure 8: Percent Total Outbreaks by Vehicle, Florida, 1997**



**Table 7: Outbreaks by Vehicle, Florida, 1997**

Outbreak	Beef	Chicken	Dairy	Fish	Fruit	Ice	Mult. Ingred.	Mult. Items	Pork	Poultry	Rice	Shellfish	Unk.	Water	Total
<b>Confirmed</b>	2 (2.5%)	1 (1.2%)	1 (1.2%)	12 (14.8%)	2 (2.5%)		8 (9.9%)	25 (30.9%)	5 (6.2%)	5 (6.2%)	2 (2.5%)	17 (19.8%)		2 (2.5%)	<b>82 (100%)</b>
<b>Suspected</b>	47 (13.2%)	27 (7.6%)	14 (3.9%)	20 (5.6%)	4 (1.1%)	5 (1.4%)	54 (15.1%)	83 (23.2%)	11 (3.1%)	30 (8.4%)	12 (3.4%)	33 (9.2%)	8 (2.2%)	9 (2.5%)	<b>357 (100%)</b>
<b>Total</b>	<b>49 (11.2%)</b>	<b>28 (6.4%)</b>	<b>15 (3.4%)</b>	<b>32 (7.3%)</b>	<b>6 (1.4%)</b>	<b>5 (1.1%)</b>	<b>62 (14.2%)</b>	<b>108 (24.7%)</b>	<b>16 (3.7%)</b>	<b>35 (8.0%)</b>	<b>14 (3.2%)</b>	<b>50 (11.2%)</b>	<b>8 (1.8%)</b>	<b>11 (2.5%)</b>	<b>439 (100%)</b>

**Table 8: Cases by Vehicle, Florida, 1997**

Outbreak	Beef	Chicken	Dairy	Fish	Fruit	Ice	Mult. Ingred.	Mult. Items	Pork	Poultry	Rice	Shellfish	Unk.	Water	Total
<b>Confirmed</b>	135 (10.2%)	2 (0.2%)	2 (0.2%)	61 (4.6%)	40 (3.0%)		149 (11.2%)	499 (37.6%)	47 (3.5%)	68 (5.1%)	45 (3.4%)	252 (18.9%)		27 (2.0%)	<b>1327 (100%)</b>
<b>Suspected</b>	139 (9.8%)	79 (5.6%)	46 (3.2%)	64 (4.5%)	8 (0.6%)	26 (1.8%)	248 (17.5%)	362 (25.5%)	31 (2.2%)	91 (6.4%)	32 (2.3%)	104 (7.9%)	147 (10.4%)	40 (2.8%)	<b>1417 (100%)</b>
<b>Total</b>	<b>274 (10.0%)</b>	<b>81 (3.0%)</b>	<b>48 (1.7%)</b>	<b>125 (4.6%)</b>	<b>48 (1.7%)</b>	<b>26 (0.9%)</b>	<b>397 (14.5%)</b>	<b>861 (31.4%)</b>	<b>78 (2.8%)</b>	<b>159 (5.8%)</b>	<b>77 (2.8%)</b>	<b>356 (12.9%)</b>	<b>147 (5.4%)</b>	<b>67 (2.4%)</b>	<b>2744 (100%)</b>



**Table 9: For Total Outbreaks - Etiologic Agent by Vehicle,  
Florida, 1997**

<b>Etiologic Agent</b>	<b>Beef</b>	<b>Chicken</b>	<b>Dairy</b>	<b>Fish</b>	<b>Fruit</b>	<b>Ice</b>	<b>Multiple Ingred.</b>	<b>Multiple Items</b>	<b>Pork</b>	<b>Poultry</b>	<b>Rice</b>	<b>Shell- fish</b>	<b>Unk</b>	<b>Water</b>	<b>Total</b>
B. cereus		2			1		3	4	1	1	6				18
C. botulinum													1		1
C. perfringens	3	2	1		1		1	2	1	1					12
Campylobacter							1					2			3
Chemical	1		2		1		2	1	2	1		1		3	14
Ciguatera				10											10
Cyclospora							1	2							3
E. coli O157:H7	1														1
Giardia						1								1	2
Listeria									1						1
Norwalk virus		1	2		1		6	15				18	2	1	46
Other							2	2	1		1	1			7
Salmonella	4	6					2	1		3				1	17
Scombroid				4											4
Shigella								3		1					4
Staphylococcus	9	5	3	2			10	12	3	3	2	3	1		53
Unknown	31	12	7	13	2	3	33	63	7	25	5	15	3	5	224
V. parahaemolyticus				2								4			6
V. vulnificus												6			6
Viral				1		1	1	3					1		7
<b>Total</b>	<b>49</b>	<b>28</b>	<b>15</b>	<b>32</b>	<b>6</b>	<b>5</b>	<b>62</b>	<b>108</b>	<b>16</b>	<b>35</b>	<b>14</b>	<b>50</b>	<b>8</b>	<b>11</b>	<b>439</b>

\*The etiologic agent was unknown in 51.1% of the outbreaks and 28.7% of the cases.

**Table 10: For Cases in Total Outbreaks, Etiologic Agent by Vehicle, Florida, 1997**

<b>Etiologic Agent</b>	<b>Beef</b>	<b>Chicken</b>	<b>Dairy</b>	<b>Fish</b>	<b>Fruit</b>	<b>Ice</b>	<b>Multiple Ingred.</b>	<b>Multiple Items</b>	<b>Pork</b>	<b>Poultry</b>	<b>Rice</b>	<b>Shellfish</b>	<b>Unknown</b>	<b>Water</b>	<b>Total</b>
B. cereus		5			2		8	29	5	3	16				<b>68</b>
C. botulinum													1		<b>1</b>
C. perfringens	154	5	3		2		11	4	2	3					<b>216</b>
Campylobacter							4					4			<b>8</b>
Chemical	2		4		17		6	1	5	3		2		7	<b>47</b>
Ciguatera				32											<b>32</b>
Cyclospora							12	36							<b>48</b>
E. coli 0157:H7	5														<b>5</b>
Giardia						8								2	<b>10</b>
Listeria									24						<b>24</b>
Norwalk virus		13	15		23		90	376				274	35	16	<b>842</b>
Other							5	2	4		2	5			<b>18</b>
Salmonella	9	13					4	3		11				2	<b>42</b>
Scombroid				11											<b>11</b>
Shigella								26		2					<b>28</b>
Staphylococcus	22	13	8	4			125	68	16	10	34	13	6		<b>319</b>
Unknown	82	32	18	43	4	12	107	248	22	95	25	44	14	40	<b>786</b>
V. parahaemolyticus				4								8			<b>12</b>
V. vulnificus												6			<b>6</b>
Viral				31		6	25	68					91		<b>221</b>
<b>Total</b>	<b>274</b>	<b>81</b>	<b>48</b>	<b>125</b>	<b>48</b>	<b>26</b>	<b>397</b>	<b>861</b>	<b>78</b>	<b>159</b>	<b>77</b>	<b>356</b>	<b>147</b>	<b>67</b>	<b>2744</b>

\*The etiologic agent was unknown in 51.1% of the outbreaks and 28.7% of the cases.



**Table 11: For Confirmed Outbreaks - Etiologic Agent by Vehicle, Florida, 1997**

<b>Etiologic Agent</b>	<b>Beef</b>	<b>Chicken</b>	<b>Dairy</b>	<b>Fish</b>	<b>Fruit</b>	<b>Multiple Ingredient</b>	<b>Multiple Items</b>	<b>Pork</b>	<b>Poultry</b>	<b>Rice</b>	<b>Shellfish</b>	<b>Water</b>	<b>Total</b>
B. cereus		1				1	1	1	1				5
C. perfringens	1								1				2
Campylobacter											2		2
Chemical					1	1						1	3
Ciguatera				7									7
Cyclospora						1	2						3
E. coli 0157:H7	1												1
Listeria								1					1
Norwalk					1	1	11				7		20
Other											1		1
Scombroid				4									4
Shigella							3		1				4
Staphylococcus						2	3	2	1	1			9
Unknown						2	3	1	1	1		1	10
V. parahaemolyticus											1		1
V. vulnificus											6		6
Viral				1			2						3
<b>Total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>12</b>	<b>2</b>	<b>8</b>	<b>25</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>17</b>	<b>2</b>	<b>82</b>

**Table 12: For Cases in Confirmed Outbreaks - Etiologic Agent by Vehicle, Florida, 1997**

<b>Etiologic Agent</b>	<b>Beef</b>	<b>Chicken</b>	<b>Dairy</b>	<b>Fish</b>	<b>Fruit</b>	<b>Multiple Ir gredient</b>	<b>Multiple Items</b>	<b>Pork</b>	<b>Poultry</b>	<b>Rice</b>	<b>Shellfish</b>	<b>Water</b>	<b>Total</b>
B. cereus		2				4	23	5	3				37
C. perfringens	130								35				165
Campylobacter											4		4
Chemical					17	2						2	21
Ciguatera				19									19
Cyclospora						12	36						48
E. coli 0157:H7	5												5
Listeria								24					24
Norwalk					23	20	327				235		605
Other											5		5
Scombroid				11									11
Shigella							26		2				28
Staphylococcus						102	19	13	3	30			167
Unknown			2			9	18	5	25	15		25	99
V. parahaemolyticus											2		2
V. vulnificus											6		6
Viral				31			50						81
<b>Total</b>	<b>135</b>	<b>2</b>	<b>2</b>	<b>61</b>	<b>40</b>	<b>149</b>	<b>499</b>	<b>47</b>	<b>68</b>	<b>45</b>	<b>252</b>	<b>27</b>	<b>1327</b>

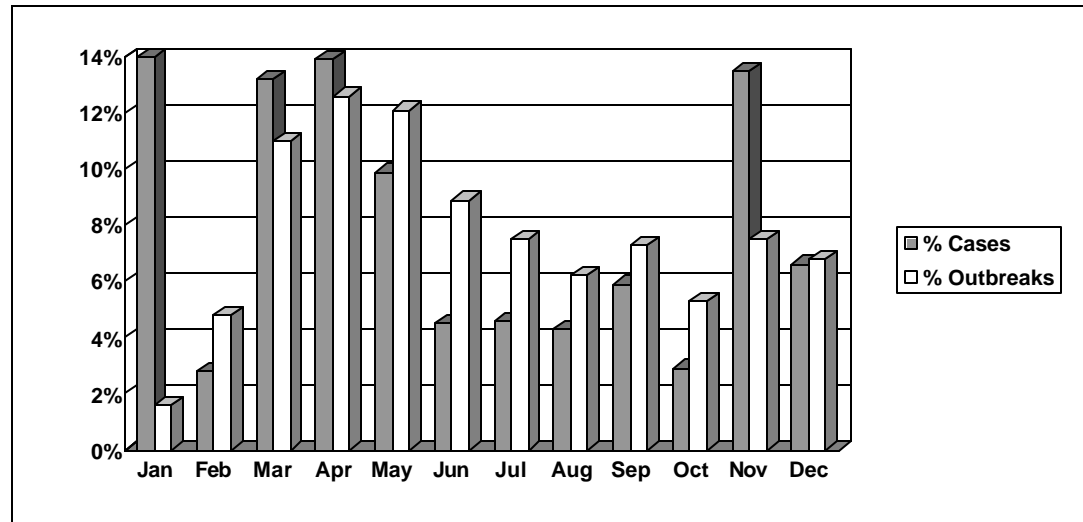
**Table 13: For Suspected Outbreaks - Etiologic Agent by Vehicle, Florida, 1997**

Etiologic Agent	Beef	Chicken	Dairy	Fish	Fruit	Ice	Mult. Ingred.	Mult. Items	Pork	Poultry	Rice	Shellfish	Unk.	Water	Total
B. cereus		1			1		2	3			6				13
C. botulinum													1		1
C. perfringens	2	2	1		1		1	2	1						10
Campylobacter							1								1
Chemical	1		2				1	1	2	1		1		2	11
Ciguatera				3											3
Giardia						1								1	2
Norwalk		1	2				5	4				11	2	1	26
Other							2	2	1		1				6
Salmonella	4	6					2	1		3				1	17
Staphylococcus	9	5	3	2			8	9	1	2	1	3	1		44
Unknown	31	12	6	13	2	3	31	60	6	24	4	15	3	4	214
V. parahaemolyticus				2								3			5
Viral						1	1	1					1		4
<b>Total</b>	<b>47</b>	<b>27</b>	<b>14</b>	<b>20</b>	<b>4</b>	<b>5</b>	<b>54</b>	<b>83</b>	<b>11</b>	<b>30</b>	<b>12</b>	<b>33</b>	<b>8</b>	<b>9</b>	<b>357</b>

**Table 14: For Cases Suspected Outbreaks - Etiologic Agent by Vehicle, Florida, 1997**

Etiologic Agent	Beef	Chicken	Dairy	Fish	Fruit	Ice	Mult. Ingred.	Mult. Items	Pork	Poultry	Rice	Shellfish	Unk.	Water	Total
B. cereus		3			2		4	6			16				31
C. botulinum													1		1
C. perfringens	24	5	3		2		11	4	2						51
Campylobacter							4								4
Chemical	2		4				4	1	5	3		2		5	26
Ciguatera				13											13
Giardia						8								2	10
Norwalk		13	15				70	49				39	35	16	237
Other							5	2	4		2				13
Salmonella	9	13					4	3		11				2	42
Staphylococcus	22	13	8	4			23	49	3	7	4	13	6		152
Unknown	82	32	16	43	4	12	98	230	17	70	10	44	14	15	687
V. parahaemolyticus				4								6			10
Viral						6	25	18					91		140
<b>Total</b>	<b>139</b>	<b>79</b>	<b>46</b>	<b>64</b>	<b>8</b>	<b>26</b>	<b>248</b>	<b>362</b>	<b>31</b>	<b>91</b>	<b>32</b>	<b>104</b>	<b>147</b>	<b>40</b>	<b>1417</b>

**Figure 9: Percent Total Outbreaks and Cases by Month, Florida, 1997**



**Table 15: Outbreaks by Month, 1997**

Outbreaks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Confirmed	9 11.1%	2 2.4%	11 13.6%	9 11.1%	12 14.8%	6 7.4%	2 2.4%	2 2.4%	7 7.4%	3 3.7%	12 14.8%	7 8.6%	82 100%
Suspected	30 8.4%	20 5.6%	38 10.6%	46 12.9%	41 11.5%	33 9.2%	3 8.7%	27 7.6%	26 7.3%	20 5.6%	23 6.4%	22 6.2%	357 100%
Total	39 9.8%	22 4.8%	49 10.0%	55 12.6%	53 12.1%	39 8.9%	33 7.5%	29 6.6%	33 7.3%	23 5.3%	35 8.0%	29 6.6%	439 100%

**Table 16: Cases by Month, 1997**

Outbreaks	Confirmed		Suspected		Total	
	Count	Percentage	Count	Percentage	Count	Percentage
Jan	276	20.80%	93	6.60%	369	13.50%
Feb	10	0.80%	69	4.80%	79	2.90%
Mar	248	18.70%	114	8.00%	362	13.20%
Apr	197	14.90%	183	12.90%	380	13.90%
May	130	9.80%	144	10.20%	274	10.00%
Jun	17	1.30%	106	7.50%	123	4.50%
Jul	7	0.50%	118	8.30%	125	5.50%
Aug	11	0.80%	115	8.10%	126	4.60%
Sep	24	1.70%	139	9.80%	163	5.90%
Oct	14	1.10%	66	4.70%	80	2.90%
Nov	211	15.89%	167	11.80%	378	8%
Dec	182	13.70%	103	7.30%	285	10.40%
Total	1327	100%	1417	100%	2744	100%

**Table 17: Outbreaks with Greater Than 10 Cases, Florida, 1997**

Status	County	No. of Cases	Site	Vehicle	Pathogen	Pathogen Status
Confirmed	Brevard	11	Caterer	Undetermined	Viral-non-norwalk	Unknown
Confirmed	Brevard	36	Restaurant	Pasta salad or turkey sand.	Norwalk virus	Suspected
Confirmed	Broward	31	Caterer	Unknown	Viral-non-norwalk	Confirmed
Suspected	Broward	11	Caterer	Unknown	C. perfringens	Suspected
Suspected	Broward	18	Nursing home	Unknown	Viral-non-norwalk	Suspected
Suspected	Broward	25	Home	Unknown	Viral-non-norwalk	Suspected
Suspected	Broward	91	Prison	Unknown	Viral-non-norwalk	Suspected
Suspected	Collier	22	Caterer	Beef, wine sauce, bacon	Unknown	Unknown
Confirmed	Dade	15	Restaurant	Imperial rice (chicken)	Unknown	Unknown
Confirmed	Dade	15	School	Unknown	Shigella	Confirmed
Confirmed	Dade	24	Bakery, grocery	Ham croquettes	Listeria	Suspected
Confirmed	Dade	25	Restaurant	Water & ice	Unknown	Unknown
Confirmed	Dade	25	Restaurant	Chicken	Unknown	Unknown
Confirmed	Dade	30	Caterer	Chicken & rice	Staphylococcus	Suspected
Confirmed	Dade	39	Nursing home	Meatloaf, chicken, ham	Viral-non-norwalk	Suspected
Suspected	Dade	12	School	Egg roll	Staphylococcus	Suspected
Suspected	Dade	13	School	Pizza, corn	Unknown	Unknown
Suspected	Dade	15	Restaurant	Turkey buffet dinner	Unknown	Unknown
Suspected	Dade	18	Grocery	Turkey, ham, roast beef	Unknown	Unknown
Suspected	Duval	16	Public water	Water/ice	Norwalk virus	Suspected
Confirmed	Escambia	193	Restaurant	Oysters	Norwalk virus	Confirmed
Confirmed	Hillsborough	23	Restaurant	Chicken & yellow rice	B. cereus	Confirmed

Confirmed	Hillsborough	120	Nursing home	Salad	Norwalk virus	Confirmed
Suspected	Hillsborough	11	Restaurant	Black beans	C. perfringens	Suspected
Suspected	Hillsborough	11	Grocery	Buttercream frosting	Norwalk virus	Suspected
Confirmed	Jackson	14	Home	Oysters	Norwalk virus	Confirmed
Suspected	Lee	11	Restaurant	Variety of salads	Norwalk virus	Suspected
Suspected	Lee	25	Restaurant	Multiple items	Norwalk virus	Suspected
Confirmed	Leon	31	Restaurant	Baby greens	Cyclospora	Confirmed
Suspected	Manatee	13	Restaurant	Chicken nuggets	Norwalk virus	Suspected
Suspected	Manatee	14	One-day cruise	Garden salad	Norwalk virus	Suspected
Confirmed	Orange	12	Caterer	Salad	Norwalk virus	Suspected
Confirmed	Orange	12	Restaurant	Leafy salad	Cyclospora	Confirmed
Confirmed	Orange	13	Home	Ham	Staphylococcus	Confirmed
Confirmed	Orange	16	Home	Potato salad or fruit	Norwalk virus	Suspected
Confirmed	Orange	47	Restaurant	Multiple possibilities	Norwalk virus	Suspected
Confirmed	Palm Beach	29	Restaurant	Unknown	Norwalk virus	Suspected
Confirmed	Palm Beach	95	School	Macaroni and turkey	Staphylococcus	Confirmed
Suspected	Palm Beach	19	Other	Unknown	Norwalk virus	Suspected
Suspected	Pasco	13	Prison	Beef stew	C. perfringens	Suspected
Confirmed	Polk	130	Other	Roast beef	C. perfringens	Confirmed
Suspected	Sarasota	34	Other	Turkey salad sandwich	Norwalk virus	Suspected
Confirmed	Seminole	17	School	Pineapple juice	Chemical	Confirmed
Confirmed	Seminole	35	Caterer	Turkey	C. perfringens	Suspected
Confirmed	Seminole	36	Restaurant	Multiple possibilities	Norwalk virus	Suspected
Confirmed	Volusia	20	Restaurant	Mixed green salad	Norwalk virus	Suspected
Confirmed	Volusia	23	Restaurant	Fruit	Norwalk virus	Confirmed

Suspected	Volusia	13	Picnic	Sub sandwiches	Unknown	Unknown
Suspected	Volusia	17	Restaurant	Grilled onion/pasta	Staphylococcus	Suspected
Suspected	Volusia	18	Grocery	Potato salad	Norwalk virus	Suspected

**Table 18: Contributing Factors in Foodborne Outbreaks, Florida 1997**

<b>Factor</b>	<b>Outbreaks</b>	<b>Cases</b>
Buffet service	1	4
Toxic container	2	19
Poor dry storage	4	34
Food preparation several hours before serving	7	65
Added poisonous chemical	8	32
Consumption: raw/lightly cooked	8	26
Inadequate reheating	10	162
Inadequate cooking	11	30
Poor personal hygiene	12	84
Improper handwashing	14	87
Natural toxicant	16	43
Unapproved source	16	62
Improper cooling	17	238
Contaminated ingredients	18	143
Other	24	93
Hand contact	26	248
Infected person	27	482
Hand contact with implicated food	35	139
Inadequate hot-holding	52	324
Unclean equipment	61	393
Cross-contamination	64	557
None reported	84	282
Inadequate refrigeration	87	543
Unknown	89	488



**Figure 10: Number of Outbreaks and Number of Cases by Contributing Factor, Florida 1997**

