Foodborne Illness Investigations and Surveillance in Miami-Dade County

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In the United States, foodborne diseases cause an estimated 76 million illnesses, 323,914 hospitalizations, and 5,194 deaths annually (1). More than 200 known diseases are transmitted by food. The causes of foodborne illness include viruses, bacteria, parasites, toxins, metals, and prions. Table 1 lists selected pathogens that can be transmitted by food.

In Florida, there are two complementary surveillance systems to monitor foodborne illnesses. There is the statewide notifiable disease surveillance system, in which physicians, laboratories, and hospitals are required to report all cases of reportable diseases/conditions, including a number caused by foodborne pathogens. There is also a system of recording all public complaints about food products and restaurants made to the Florida Department of Health (DOH), the Department of Business and Professional Regulation (DBPR), the Department of Agriculture and Consumer Services (DACS), and the Florida Poison Information Center (FPIC). Unlike the notifiable disease surveillance system, this system records illnesses even if no pathogen has been identified (e.g. patient never had a stool culture) or if the agent (e.g. Norwalk virus) is not a cause of one of the reportable diseases.

Statewide there are nine regional food and waterborne illness epidemiologists who assist 67 county health departments in the investigation of these outbreaks. They assist county investigators and state inspectors with reporting activities and outbreak investigations. Outbreak investigations involve determining agents, vehicles, mode of contamination, and proposing recommendations to prevent the future occurrence of these outbreaks. In Miami-Dade County, this system has been in the present form since 1994.

Food production facilities are regulated and inspected by various state agencies based on their type. DBPR inspects restaurants and hotels, while DACS regulates and inspects grocery stores, supermarkets, bakeries, and delis. DOH regulates the food service of schools, hospitals, day care facilities, and nursing homes. Together they help maintain safety in the preparation and distribution of food in the state.

The Office of Epidemiology and Disease Control, Miami-Dade County Health Department, has maintained a detailed database of county foodborne illness reports since 1995. Reports are identified through the notifiable disease surveillance system and from public complaints made to DOH, FPIC, DBPR, and DACS. These reports are classified, logged, and investigated to determine if they are outbreaks and if there is a risk of additional cases. A foodborne illness outbreak investigation is a team effort that involves DOH and facility regulatory agency staff.

In 1999, there were 251 foodborne illness complaints in Miami-Dade County (Table 2). Of these , 63% were reported to DBPR, 28% to DACS, and 9% to MDCHD (Figure 1). Most complaints were regarding food

served in restaurants, followed by grocery stores, patient's homes, and school cafeterias.

The 251 complaints were investigated, and 46 of them were determined to be outbreaks. Outbreaks are defined as an episode in which two or more persons experience a similar illness or common pathogen and have a common food exposure and time association. However, a single case of botulism is also considered as an outbreak. All outbreaks are further classified as confirmed or suspected based on the strength of the epidemiologic evidence.

Of the 46 outbreaks, 1 was classified as a confirmed outbreak and the other 45 as suspected outbreaks. The confirmed outbreak was a typhoid fever outbreak, in which imported frozen mamey fruit was the implicated vehicle. The suspected outbreaks included two ciguatera toxin outbreaks, one scombrotoxin outbreak, and one salmonellosis outbreak. One was a case of botulism in which a food item was suspected but not identified. The other 40 outbreaks had no identified agent.

Figure 2 depicts the number of food-related complaints and outbreaks by year between 1995 and 1999 in Miami-Dade County. The number of complaints and outbreaks peaked in 1997 and then declined. This would suggest a decline in foodborne illness. According to data from the national foodborne active surveillance network (FoodNet), the incidence rate of illnesses due to foodborne pathogens declined nationwide from 50.3 to 40.7 per 100,000 people between 1997 and 1999. The decline was greatest in the incidence rate of *Campylobacter* infections. The decline may be due to improved disease prevention efforts in the agricultural and food processing industry (2). However, during that time period, the number of reported *Campylobacter* infections increased in Miami-Dade County from 126 to 168, and the number of *Salmonella* infections, which are also usually transmitted by food, stayed the same (370 in 1997 to 379 in 1999). The number of shigellosis cases did decline from 296 to 228 between 1997 to 1999 although *Shigella* are most often transmitted person to person (3). Therefore, it is not clear if foodborne illnesses and outbreaks are truly decreasing in Miami-Dade County. There may also be a change in reporting practices to either the notifiable disease surveillance system or the foodborne complaints. Nevertheless, foodborne illness remains a significant public health problem, and it is important to continually educate consumers and food handlers about hand washing and proper food preparation and storage to prevent foodborne illness.

(1) Mead, PS, Slutsker, L, Dietz V, et al. Food-related illness and death in the United States. *Emerg Infect Dis* 1999;5:607-25.
(2) CDC. Preliminary FoodNet Data on the Incidence of Foodborne Illnesses-Selected Sites, United States, 1999. *MMWR* 2000;49:201-5.
(3) Chin, J. *Control of Communicable Diseases Manual.* 17th Ed. Washington, DC: APHA, 2000: 452.

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Table 1. Selected List Of Pathogenic Organisms That Are Transmitted Through Food

Infected handler transmission

Hepatitis A virus
Norwalk and Norwalk -like viruses
Salmonella Typhi
Shigella species
Staphylococcus aureus
Staphylococcus pyogenes

Contaminated or cross- contaminated food
Campylobacter jejuni
Entamoeba histolytica
Enterohemorrhagic *Escherichia coli*
Enterotoxigenic *Escherichia coli*
Giardia lamblia
Non- *typhi Salmonella*
Rotavirus
Taenia solium
Vibrio cholerae
Yersinia enterocolitica
Adapted from the Federal Register (62 FR 49519)

Table 2. Foodborne Illness Statistics, Miami-Dade County, 1997-1999

Sources	1999	1998	1997
Complaints of foodborne illness	251	256	350
Outbreaks of foodborne illness	46	57	101
Persons reported with symptoms	594	764	804
Reported deaths related to illness	0	0	0

Most common etiology of cases: Norwalk Virus, *E. coli* O157:H7, Scombroid, B. *cereus* , Ciguatera, Chemical
(from outbreaks) *Vibrio vulnificus* , *Salmonella* , *Shigella* , *Staphyloccocus, Campylobacter, Listeria*

Note: 1.These statistics do not include cases of organisms usually transmitted by foods for which a foodborne epidemiological link was not established.
2. Complaints and outbreaks are from facilities regulated by three departments:
Florida Department of Agriculture and Consumer Services
Florida Department of Business and Professional Regulation
Florida Department of Health

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Figure 1. Complaints of Foodborne Illness by Regulatory Agency which receives complaints Miami-Dade County, 1999 (N=251)

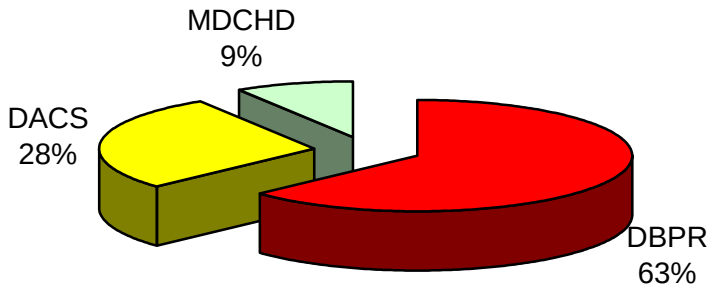
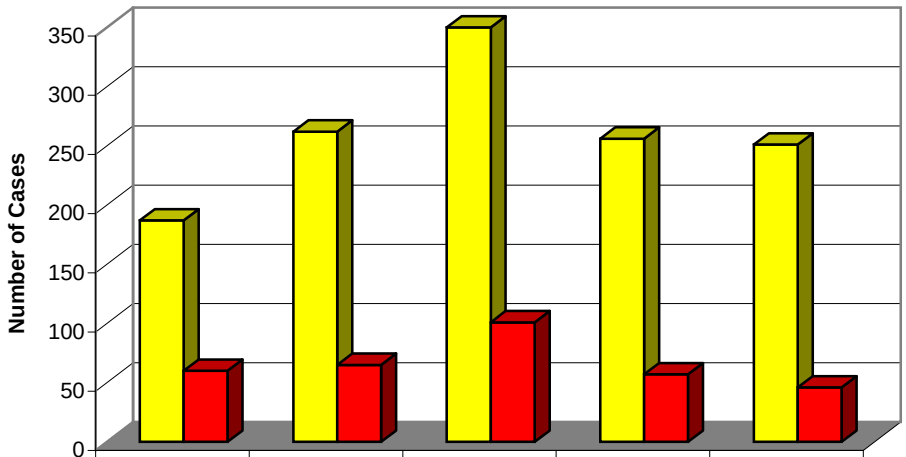


Figure 2. Foodborne Complaints and Outbreaks Miami-Dade County, 1995-1999



	1995	1996	1997	1998	1999
Complaints	187	262	350	256	251
Outbreaks	60	65	101	57	46

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Monthly Report

Selected Reportable Disease/Conditions in Miami-Dade County, *April, 2000*

Diseases/Conditions	Reported Cases this Month	2000 Year to Date	1999 Year to Date	1998 Year to Date
AIDS *Provisional	152	544	563	544
Amebiasis, Acute	2	2	5	7
Campylobacteriosis	13	20	27	18
Chancroid	0	0	0	0
Chlamydia trachomatis	350	1442	1466	671
Ciguatera Poisoning	0	0	0	0
Cryptosporidiosis	0	1	3	2
Cyclosporosis	0	0	0	0
Diphtheria	0	0	0	0
E. coli , 0157:H7	1	0	0	1
E. coli , Other	0	0	0	0
Encephalitis	0	0	0	0
Giardiasis, Acute	2	4	15	17
Gonorrhea	328	1125	1049	480
Granuloma Inguinale	0	0	0	0
Haemophilus influenzae B (invasive)	0	1	0	0
Hepatitis A	10	24	18	46
Hepatitis B	4	8	12	18
HIV *Provisional	148	615	590	656
Lead Poisoning	59	118	Not available	Not available
Legionnaire's Disease	0	0	0	1
Leptospirosis	0	0	0	0
Lyme disease	2	2	0	0
Lymphogranuloma Venereum	0	0	0	0
Malaria	2	2	6	6
Measles	0	0	0	0
Meningitis (except aseptic)	5	7	11	7
Meningococcal Disease	2	7	5	2
Mumps	1	1	2	0
Pertussis	3	3	2	7
Polio	0	0	0	0
Rabies, Animal	0	0	0	1
Rubella	0	0	0	0
Salmonellosis	13	37	50	62
Shigellosis	8	26	38	52
Streptococcus pneumoniae, Drug Resistant	46	69	56	25
Syphilis, Infectious	9	49	25	10
Syphilis, Other	50	272	349	191
Tetanus	0	0	0	0
Toxoplasmosis	0	0	0	0
Tuberculosis *Provisional	32	80	74	111
Typhoid Fever	0	0	15	2
Vibrio , *cholera*	0	0	0	0
Vibrio , Other	0	0	0	1

*Data on AIDS are provisional at the county level and is subject to edit checks by state and federal agencies.

** Data on tuberculosis are provisional at the county level.

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To report diseases or for information:

Office of Epidemiology and Disease Control	
Childhood Lead Poisoning Prevention Program	**305-324-2414**
Other diseases and outbreaks	**305-324-2413**
Injury Prevention Program	**305-324-2953**
HIV/AIDS Program	**305-377-7400**
STD Program	**305-325-3242**
Tuberculosis Program	**305-324-2470**
Special Immunization Program	**305-376-1976**
Nights, weekends, and holidays	**305-377-6751**

Miami-Dade County Health Department Vital and Morbidity Statistics Report 1997-1998 is available on the web at <www.dadehealth.org/discontrol/dc_annualreport.shtml> in Acrobat PDF format. Each table/figure/map is linked to contents in this file. You can review each of them conveniently by clicking contents through bookmarks under the navigation panel of Acrobat Reader. Your comment(s) are welcomed. The *Epi Monthly Report* is also available on this web site.

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