



Increased Incidence of Salmonellosis in Miami-Dade County (January – August 2003)

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Background

Salmonellosis is an infectious disease caused by bacteria called *Salmonella*. An estimated 1.4 million cases of salmonellosis occur annually in the United States, of which approximately 40,000 are actually reported. This disease is characterized by diarrhea, vomiting, fever, and abdominal cramps 12 to 72 hours after infection. Although most people recover within 4-7 days without treatment, in some persons the diarrhea may be so severe that hospitalization is required. If the infection spreads to other parts of the body via the bloodstream, it can lead to bacteremia and possibly death. All age groups can be affected; however, groups at greatest risk for severe illness include infants, the elderly, and the immune compromised.

Salmonella live in the intestinal tracts of humans, animals, and birds. *Salmonella* are usually transmitted to humans through the consumption of contaminated food, water, or through contact with infected animals. Secondary cases of salmonellosis are often transmitted person-to-person by the fecal-oral route (eg, by infected food handlers). There are many different kinds of *Salmonella* bacteria characterized by their distinct serotypes. Approximately 2,000 sero-

types can cause the disease in humans. In the United States, the most common serotypes are the *Salmonella typhimurium* and *Salmonella enteritidis*. *S. typhimurium* belongs to serotype group B.

Between January and August 2003, reported cases of salmonellosis in Miami-Dade County reached a historical high level compared to the same time periods of the previous 5 years. A special data analysis was conducted to find out distribution and contributing factors.

Data and Methods

Data was obtained from the Merlin surveillance system of Florida Department of Health, Bureau of Epidemiology. The data analyzed in this report was based on disease onset between January 1, 1998 and August 31, 2003. All cases included in this report were laboratory confirmed. The collected information was analyzed using SAS (version 9.0, SAS Institute Inc., NC, USA).

Results

Epidemiology

A total of 361 confirmed cases of *Salmonella* (*Salmonella* isolates) were reported from January 1, 2003 to August 31, 2003 in Miami-Dade County.

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The number of cases during the same time period in 2002 was 248, a 45.6% increase this year. In particular, in the months of March, May, June and August 2003, reported cases were above the mean plus 2 standard deviations from the previous five years (**Figure 1, 2**). Other counties in Florida have not experienced a similar increase. Of the 361 reported salmonellosis cases, 42 (13.3%) were associated with outbreaks.

The increase in the number of salmonellosis cases this year compared to last year, was observed across all age groups, with the highest percentage increase occurring in those aged 65 and older, followed by school age children (5 – 17 years old): 18 to 32 reported cases (77.8% increase), and 46 to 77 reported cases (67.4% increase) respectively (**Figure 3**). The reported cases in children aged less than 5 rose from 122 last year to 163 in 2003 (33.6% increase) during the same time period. In adults aged 18 – 44, the reported cases increased from 42 to 61, a 45.3 percent increase, while in adults aged 45 – 64, the reported cases increased from 20 to 28, a 40.0 percent rise.

Of the 163 reported cases among children aged 0-4 years, 33 (20.2%) were from daycare child centers, representing an increase of 83.3% from the same time period in 2002. Of 163 cases, 22 (13.5%) were associated with outbreaks, showing a dramatic increase from the previous year. The highest percentage increase in the reported cases among the 0-4 age group was seen in toddlers aged 2-3 years (**Table 1**). The reported cases among 2-year-old children increased by 117.6% (from 17 to 37) as compared to the same period in 2002, while among the 3-year-old group, the reported cases rose by 137.5% (from 8 to 19).

Compared to the same period in the previous year, in 2003, Hispanics had the greatest increase of reported salmonellosis cases: from 159 to 266, a 76% increase. Reported cases among non-Hispanic whites increased from 30 to 39 (30% increase), and among non-Hispanic blacks from 31 to 43 (38.7% increase). In the non-Hispanic “other” population, the reported cases increased slightly from 4 to 5, a 25 percent increase.

The reported increase in salmonellosis cases in 2003,

was 64.2% in females (increased to 179 from 109 cases in 2002), and 32.8% (182 from 137 cases in 2002) in males. The male to female ratio of 1 is not significantly different from that of the previous 5 years.

Laboratory

Salmonella serotype group B accounts for 38.8% of all human *Salmonella* isolates typed in Miami-Dade County between January and August, followed by group D (13.3%), group C1 (10.2%), group C2 (6.1%), group E (4.1%), group C (3.0%), others [A, D1, E1, G, I, O, Z] (4.1%), and unknown (19.8%). Serotype group B was the most commonly found *Salmonella* isolate across all age groups and racial/ethnic groups.

Comments and Prevention

So far, we have not identified the reasons for this increase in salmonellosis in Miami-Dade County. Most reported cases of salmonellosis were sporadic between January and August in 2003. According to the Centers for Disease Control and Prevention (CDC), improperly cooked poultry, eggs, and other poultry products are responsible for about 50% of common vehicle epidemics. The mainstay of prevention continues to be hand washing, food safety and hygiene precautions and food industry regulations.

Do's

1. Do cook poultry and meat well, not pink in the middle.
2. Do wash produce (fruits and vegetables) thoroughly before eating.
3. Do keep uncooked meats separate from fruits and vegetables, cooked foods, and ready-to-eat foods.
4. Do wash hands, cutting boards, counters, knives, and other utensils very well after handling uncooked foods.
5. Do wash hands before handling any food, and between handling different food items.



6. Do wash hands after contact with animal feces.
7. Do wash hands immediately after handling reptiles (including turtles, snakes, lizards, etc.)
8. Do keep eggs refrigerated.
9. Do throw away cracked or dirty eggs.
10. Do eat eggs promptly after cooking.
11. Do refrigerate unused or leftover foods that contain eggs



Don'ts

1. Don't eat raw or undercooked eggs, poultry (chicken), or meat (including hamburgers).
2. Don't eat restaurant foods made with raw or undercooked, unpasteurized eggs.
3. Don't eat or drink raw or unpasteurized milk or other dairy products.
4. Don't prepare food or pour water for others, if you have been infected, until you have been shown to no longer be carrying the *Salmonella* bacteria.
5. Don't keep reptiles as pets for small children or keep them in the same house as an infant.
6. Don't keep eggs warm for more than 2 hours.



References

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Table 1. Reported Salmonellosis Cases among children aged 0-4 Years between January and August, Miami-Dade County, 2003 (Based Onset Date)

Age (yrs.)	1998		1999		2000		2001		2002		2003	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
0	37	44.0	60	53.6	57	49.1	50	41.3	58	47.5	56	34.4
1	19	22.6	16	14.3	20	17.2	28	23.1	26	21.3	32	19.6
2	12	14.3	14	12.5	18	15.5	16	13.2	17	13.9	37	22.7
3	11	13.1	10	8.9	13	11.2	14	11.6	8	6.6	19	11.7
4	5	6.0	12	10.7	8	6.9	13	10.7	13	10.7	19	11.7
All	84	100.0	112	100.0	116	100.0	121	100.0	122	100.0	163	100.0



Figure 1. Reported Salmonellosis Cases by Month in Miami-Dade County
1998-2003

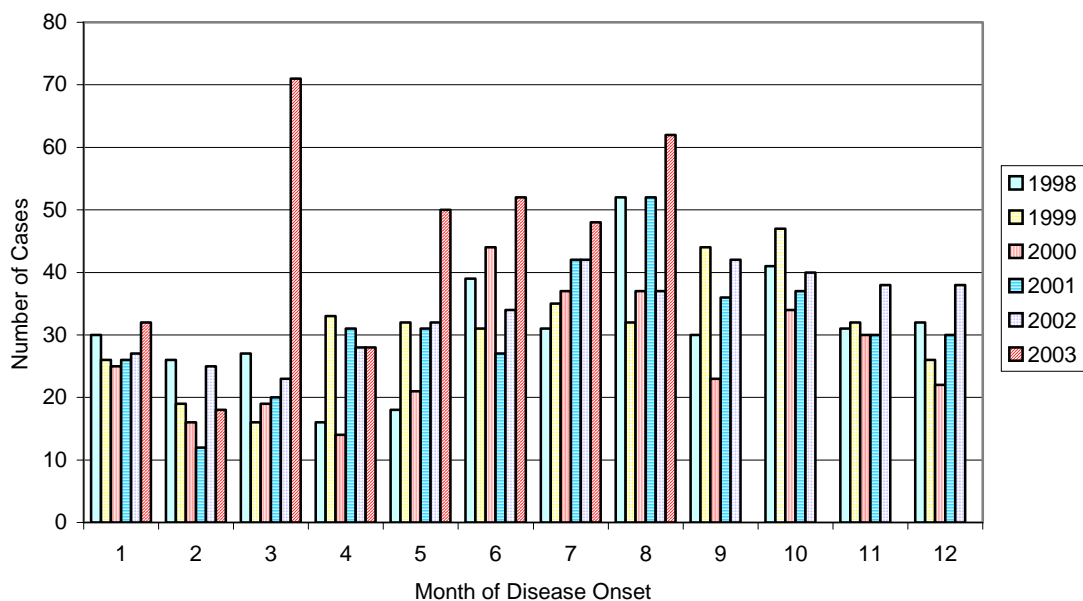
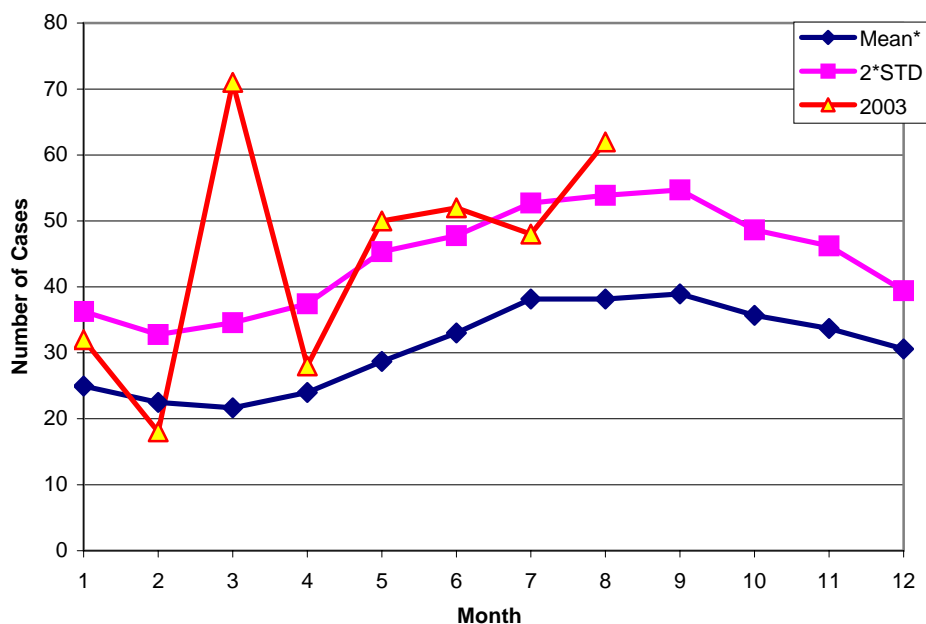


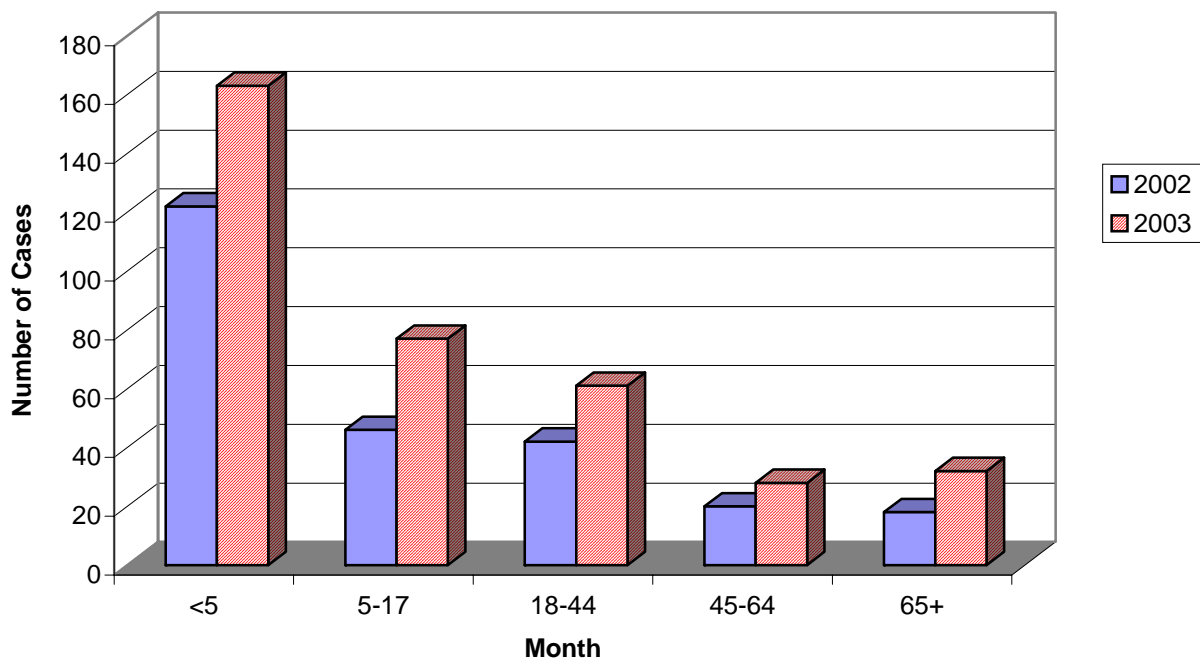
Figure 2. Reported Salmonellosis Cases by Month
Comparison with Historical Data, Miami-Dade, 2003



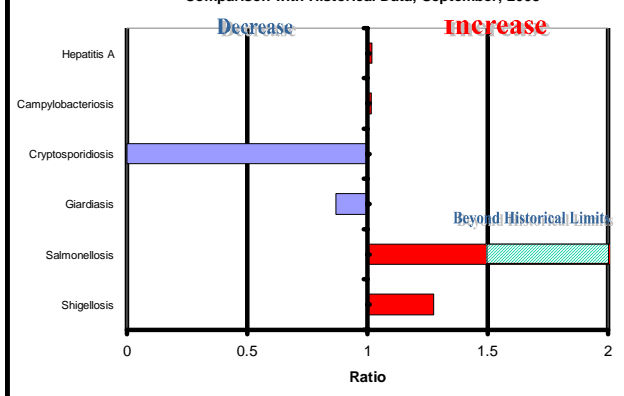
*: mean of 15 month totals (from previous, comparable, and subsequent month periods for the past 5 years).



Figure 3. Reported Salmonellosis Cases by Age Group and Year between January and August, Miami-Dade County, 2002-2003



Selected Notifiable Disease Reports, Miami-Dade County, Comparison with Historical Data, September, 2003



*Ratio of current month total to mean of 15 month totals (from previous, comparable, and subsequent month periods for the past 5 years).

To report diseases or for information:

Office of Epidemiology and Disease Control

Childhood Lead Poisoning
Prevention Program (305) 623-3565
Hepatitis (305) 324-2490
Other diseases and outbreaks (305) 324-2413

HIV/AIDS Program (305) 324-2459
STD Program (305) 325-3242
Tuberculosis Program (305) 324-2470
Special Immunization Program (305) 376-1976

Nights, weekends, and holidays
(305) 377-6751



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Monthly Report

Selected Reportable Diseases/Conditions in Miami-Dade County, September 2003

Diseases/Conditions	2003 this Month	2003 Year to Date	2002 Year to Date	2001 Year to Date	2000 Year to Date	1999 Year to Date
AIDS ^{Provisional}	104	801	914	994	1051	1096
Animal Rabies	0	0	0	1	0	0
Campylobacteriosis	14	102	72	92	119	109
<i>Chlamydia trachomatis</i>	291	3073	3678	2693	2365	3176
Ciguatera Poisoning	0	0	0	0	2	0
Cryptosporidiosis	0	9	5	10	15	16
Cyclosporiasis	0	1	1	0	0	0
Diphtheria	0	0	0	0	0	0
<i>E. coli</i> , O157:H7	0	0	0	2	3	4
<i>E. coli</i> , Non-O157	0	3	1	1	0	0
<i>E. coli</i> , Other	0	0	0	0	0	0
Encephalitis (except WNV)	0	0	1	0	0	0
Encephalitis, West Nile Virus	3	4	1	0	0	0
Giardiasis, Acute	20	137	153	197	183	107
Gonorrhea	112	1311	1574	1389	1606	2149
Granuloma Inguinale	0	0	0	0	0	0
Hepatitis A	17	46	118	129	70	67
Hepatitis B	3	43	35	46	86	21
HIV ^{Provisional}	159	1312	1534	1299	1345	1521
Lead Poisoning	17	190	222	183	335	231
Legionnaire's Disease	1	5	0	2	0	0
Leptospirosis	0	0	0	0	0	0
Lyme disease	0	3	2	6	4	0
Lymphogranuloma Venereum	0	0	0	0	0	0
Malaria	1	9	9	14	21	15
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	1	7	4	7	13	9
Meningococcal Disease	0	3	10	14	22	12
Mumps	0	0	0	0	1	2
Pertussis	2	9	6	1	7	10
Polio	0	0	0	0	0	0
Rubella	0	0	0	0	0	0
Rubella, Congenital	0	0	0	0	1	0
Salmonellosis	82	381	234	219	208	221
Shigellosis	27	240	187	113	172	141
<i>Streptococcus pneumoniae</i> , Drug Resistant	9	92	73	135	147	69
Syphilis, Infectious	16	131	158	154	100	54
Syphilis, Other	86	787	796	625	552	574
Tetanus	0	0	0	0	0	0
Toxoplasmosis	2	8	14	11	0	2
Tuberculosis ^{Provisional}	15	158	156	167	203	201
Typhoid Fever	1	4	3	0	2	16
<i>Vibrio cholera</i> Type O1	0	0	0	0	0	0
<i>Vibrio cholera</i> Non-O1	0	0	1	0	0	0
<i>Vibrio</i> , Other	0	1	0	0	0	0

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

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



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