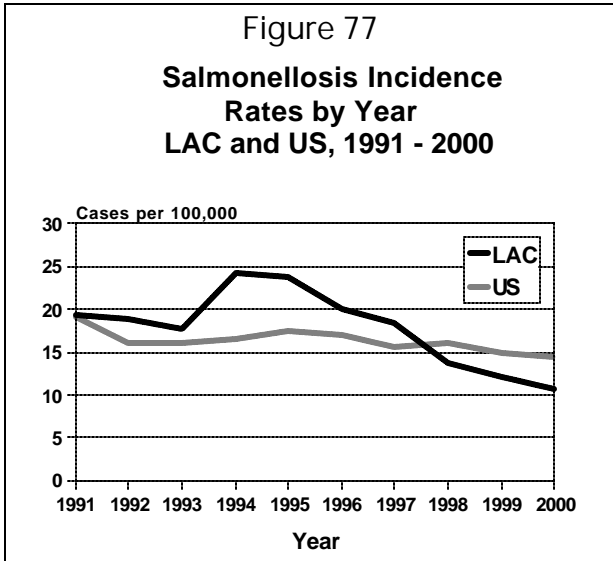


SALMONELLOSIS

CRUDE DATA	
Number of Cases	990
Annual Incidence ^a	
LA County	10.7
California ^b	13.0
United States ^b	14.5
Age at Onset	
Mean	25.5
Median	19
Range	< 1 - 90 years
Case Fatality	
LA County	0.8%
United States	N/A

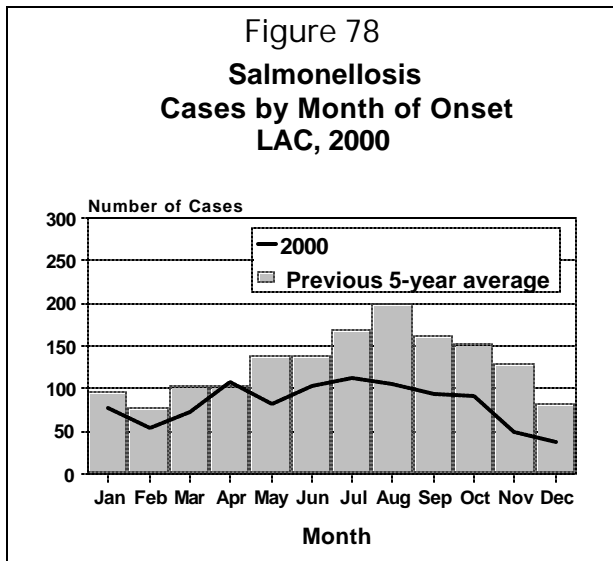
^a Cases per 100,000 population.

^b National Electronic Telecommunications System for Surveillance.



ETIOLOGY

Salmonellosis is caused by a bacterium, *Salmonella enterica*, of which there are at least 2,400 serotypes. It is transmitted by the fecal-oral route, from animal or human, with or without intermediary contamination of foodstuffs. The most common symptoms include acute gastroenteritis with sudden onset of fever, headache, abdominal pain, diarrhea, nausea, and sometimes vomiting. Occasionally the clinical course is that of enteric fever or septicemia. Asymptomatic infections may occur. The incubation period is usually 12-36 hours for gastroenteritis, longer and variable for other manifestations of salmonellosis. Communicability lasts as long as organisms are excreted, usually from 2-5 weeks, but may last for several months to years. Even healthy people are susceptible, but persons especially at risk are those who are on antacid therapy, have recently taken or are taking broad-spectrum antibiotic therapy or immunosuppressive therapy, those who have had gastrointestinal surgery, achlorhydria, neoplastic disease, or other debilitating conditions. Severity of the disease is related to the serotype, the number of organisms ingested, and host factors. Immunocompromised persons, such as those with cancer or HIV infection, are at risk for recurrent *Salmonella* septicemia. Occasionally the organism may localize anywhere in the



body, causing abscesses, osteomyelitis, arthritis, meningitis, endocarditis, pericarditis, pneumonia, or pyelonephritis.

DISEASE ABSTRACT

- The 2000 salmonellosis crude rate dropped 10% compared to 1999.
- *Salmonella* Enteritidis (SE) has remained the most common serotype since 1994 (accounting for 24% of cases reported in 2000), despite having decreased by 8%.
- SE was the etiologic agent identified in 4 of 8 salmonellosis outbreaks.

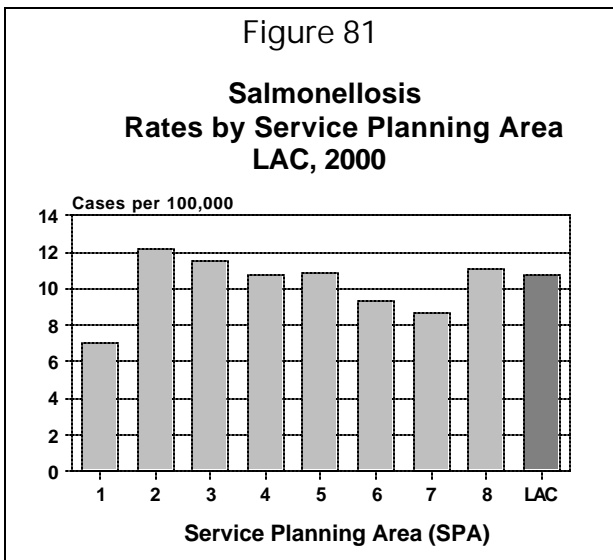
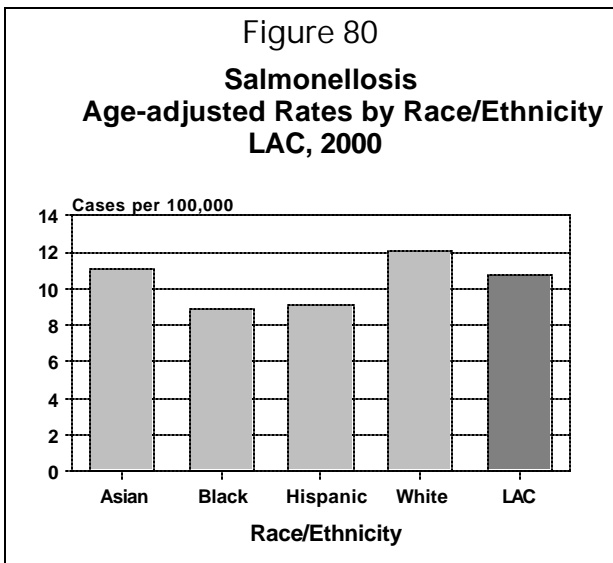
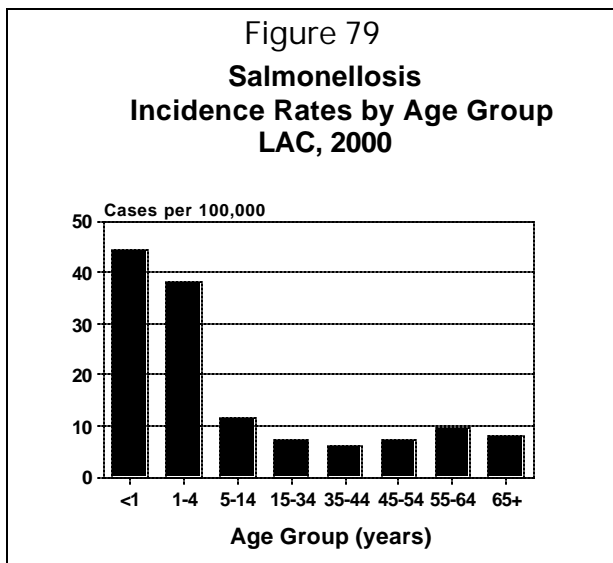
STRATIFIED DATA

Trends: The incidence of reported salmonellosis cases in 2000 dropped to 10.7 cases per 100,000 population, a decrease of 10%. This continues a five-year declining trend and represents the lowest rate in LAC in the past 11 years (Figure 77). Despite an 8% decrease in SE cases in 2000, SE still makes up 24% of all *Salmonella* isolates. An increase in *S. Newport* cases occurred due to an outbreak in the fall of 2000, while the reason for the increase in *S. Berta* and *S. Agona* cases is unknown (Table 6).

Seasonality: In 2000, an early peak was seen in April, due in part to a large outbreak that began in late March. A second peak occurred during mid-summer and continued through October. The peak was earlier than the usual seasonal late summer increase in reported cases due to two outbreaks occurring in July (Figure 78).

Age: As in past years, the highest age-specific rates of infection occurred among infants, aged less than 1 year (44 per 100,000 population) followed by children aged 1 - 4 years (38 per 100,000; Figure 79).

Sex: The male-to-female rate ratio was 1:1.



Race/Ethnicity: All racial/ethnic groups had similar age-adjusted rates of salmonellosis in 2000, with the highest rate among Whites (12 cases per 100,000 population). Hispanics had a rate (9 per 100,000) significantly lower than the county average (10.7 per 100,000) (Figure 80).

Location: Harbor Health District had the highest incidence rate (18 per 100,000 population), followed by Foothill and Glendale (both 16 per 100,000). By Service Planning Area, SPA 2 had the only rate significantly higher than the county average (12 cases per 100,000), while SPA 1 had the only rate significantly lower than the county average (7 per 100,000).

Table 6. Top Ten *Salmonella* serotypes, LAC, 1999 - 2000

Serotype	1999 N = 1239 *		2000 N = 963 *		Percent Change
	No.	Percent	No.	Percent	
Enteritidis	326	26	233	24	-8
Typhimurium **	169	14	175	18	+34
Newport	46	3.7	53	5.5	+49
Heidelberg	59	4.8	35	3.6	-25
Thompson	71	5.7	34	3.5	-39
Agona	26	2.1	28	2.9	+38
Montevideo	41	3.3	26	2.7	-18
Berta	21	1.7	25	2.6	+53
Hadar	46	3.7	22	2.3	-38
SaintPaul	32	2.6	20	2.1	-19

* Denominator N = only those isolates which were serotyped.

** Includes *S. Typhimurium* var. Copenhagen and degraded form.

PREVENTION

Each report of salmonellosis is investigated and preventive measures are recommended. Review of investigation reports shows that many persons engage in high-risk food handling behaviors—such as consumption of raw or undercooked eggs and meats, not washing hands and/or cutting boards after handling raw poultry or meat, and not maintaining food at proper temperature to prevent bacterial growth. These investigations demonstrate a need for public education on proper handling and preparation of animal-derived foods, especially eggs. Also, health education targeted at specific racial/ethnic groups is necessary—for example, 70% of salmonellosis cases resulting from turtle contact were Hispanic. In addition, now that fresh produce has been recognized as a source of salmonellosis (2 outbreaks in LAC for 2000 were associated with fresh produce), the washing of fresh fruits and vegetables prior to consumption is advised.

COMMENTS

The reason for the declining rate of salmonellosis—as for other enteric diseases—is unknown. Outbreak-related cases accounted for 7% of all culture-confirmed salmonellosis cases in 2000.

Salmonella Enteritidis (SE) was the etiologic agent identified in half of these outbreaks, and in 2 of those investigations, the source of the outbreak was not found, in large part due to a lack of cooperation by the victims.

Decreases in sporadic (non-outbreak) cases of SE infections parallel an overall decrease in SE incidence in Southern California. Since 1995, fresh produce, most notably alfalfa sprouts, has increasingly been recognized in the US as a source of salmonellosis. In 2 of the outbreaks for 2000, fresh produce (cantaloupe and unpasteurized orange juice) was implicated as the source. Both outbreaks were multi-state outbreaks involving the Western US. In both outbreaks, the produce was imported from Mexico. These outbreaks occurred in March and April, months in which much of the available fresh produce is imported into the US.

Salmonellosis diagnosed just prior to death was reported as a contributing cause of death in 8 cases, all of whom had underlying health problems—such as cancer, renal disease, diabetes, and HIV infection. All were hospitalized with symptoms probably caused by salmonellosis: 4 had sepsis with positive blood cultures; 2 had positive urine cultures; 1 had a positive stool culture; and 1 had pneumonia with a positive sputum.

Table 7. Salmonellosis Outbreaks in Los Angeles County, 2000

Onset Month	Outbreak Setting	Total #Ill	Culture Positive	Serotype	Suspect Vehicle	Suspect Source
March*	Various	17	13	SE	Unpasteurized Orange Juice	Unpasteurized Orange Juice
April*	Various	3	3	SP	Cantaloupe	Cantaloupe
July	Office Building	35	12	ST	Hamburger Buns	Foodhandler
July*	Restaurants	11	11	ST	Hamburger Buns	Foodhandler
August	Various	23	19	SN	Birria	Goatmeat
September	Private Home	14	1	SE	Pancit (Catered Filipino pork dish)	Unknown
October	Private Home	13	4	SE	Unknown	Unknown
November	Private Home	20	3	SE	Unknown	Unknown
		136	66			

SE = *Salmonella* Enteritidis
SN = *Salmonella* Newport

* Indicates multi-state or multi-county outbreak; number represents LAC cases only.

SP = *Salmonella* Poona
ST = *Salmonella* Thompson

ADDITIONAL RESOURCES

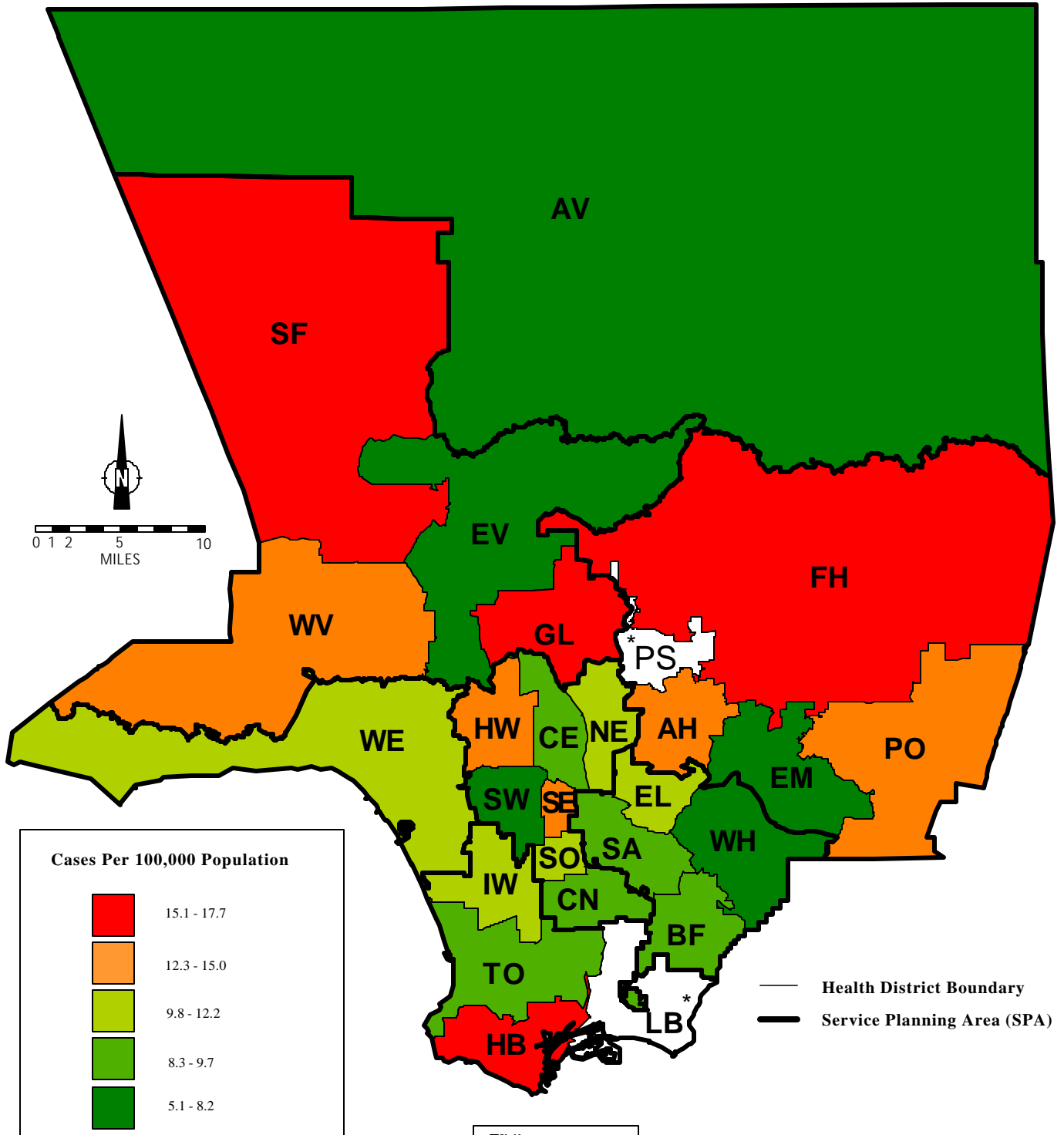
Websites:

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_g.htm

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salment_g.htm

<http://lapublichealth.org/acd/procs/b73/b73index.htm>

MAP 11. Salmonellosis Rates by Health District, Los Angeles County, 2000*



*Excludes Long Beach and Pasadena Data.

