

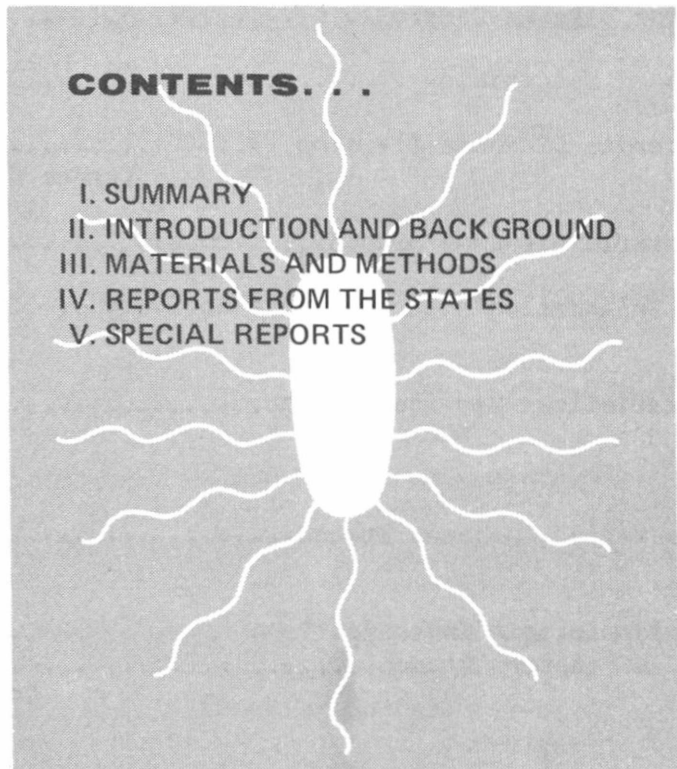
CENTER FOR DISEASE CONTROL

SALMONELLA

SURVEILLANCE

CONTENTS . . .

- I. SUMMARY
- II. INTRODUCTION AND BACKGROUND
- III. MATERIALS AND METHODS
- IV. REPORTS FROM THE STATES
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PREFACE

Summarized in this report is information received from state and city health departments, university and hospital laboratories, the U. S. Food and Drug Administration, and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Surveillance Report are most welcome. Please address:

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*Through June 1974

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I. SUMMARY

In 1973, 26,693 isolations of salmonella were reported to CDC, an increase of 583 cases or 2.2% over the previous year. As in 1972, Salmonella typhimurium (including S. typhimurium var. copenhagen), S. newport and S. enteritidis were respectively the first, second, and third most commonly isolated serotypes.

II. INTRODUCTION

This report summarizes the results of the 12th year (January 1, 1973-December 31, 1973) of the Salmonellosis Surveillance Activity established jointly by the Center for Disease Control and the Associations of State and Territorial Epidemiologists and Laboratory Directors in 1962. The bulwark of the program is the weekly reporting of isolations of salmonella by the 50 states, the District of Columbia, the Salmonella Reference Center-Beth Israel Hospital, New York City, the U. S. Department of Agriculture, and the U. S. Food and Drug Administration. The objectives of the Salmonellosis Surveillance Activity have been to define endemic patterns of salmonellosis in this country, to detect outbreaks of salmonellosis, particularly those with interstate ramifications, and to monitor control efforts.

III. MATERIALS AND METHODS

The Salmonella Surveillance Activity solicits information on outbreaks and other aspects of human and nonhuman salmonellosis from health workers in the private sector and from officials at the local, state, and federal level. Each week reports of laboratory isolations from the 50 states are reviewed. These reports represent laboratory isolations of salmonella without distinction as to whether they are from clinical or subclinical cases or chronic or convalescent carriers. Cases of salmonellosis not confirmed by culture are not included. These reports are analyzed by state and by serotype to determine whether a particular state or geographic area is experiencing an increase in the number of salmonella isolations of a particular serotype for that particular time period.

Many selective factors determine which salmonella infections will be reported to the Salmonella Surveillance Activity. Among these factors are the severity of the infection, the epidemiologic circumstances surrounding the case, the accessibility to a physician, and the availability of laboratory facilities. Interpretations of these data are limited by the bias inherent in the data analyzed. For example, geographic prevalence and age of patients reflect "interest factors". Despite these limitations, certain observations are justified, and the data herein provide the basis for comparison with past and future results.

IV. REPORTS FROM THE STATES

A. Human

Serotype Frequency - A total of 180 different salmonella serotypes were reported in 1973, representing a decrease of 8 over 1972. These 180 represent approximately 11% of the more than 1,700 known salmonella serotypes and variants.

The 10 most frequently reported serotypes (Table 1) accounted for 18,247 (68.3%) of the 26,693 isolates reported in 1973. Of these 10 serotypes, S. agona showed

the greatest rise with a 165% increase in the number of isolations reported since 1972. S. agona and S. typhi were the serotypes new to the list since last year. The table also demonstrates the correlation between human and nonhuman sources of salmonella with 5 serotypes appearing in both categories. These similarities reflect the importance of the nonhuman reservoirs of salmonella in the epidemiology of human salmonellosis.

Table 1

The 10 Most Frequently Reported Serotypes from Human and Nonhuman Sources, 1973

HUMAN				NONHUMAN			
Serotype	Number	Percent	Rank last year	Serotype	Number	Percent	Rank last year
<u>typhimurium*</u>	8,607	32.2	1	<u>typhimurium*</u>	345	23.0	1
<u>newport</u>	2,058	7.7	2	<u>senftenberg</u>	87	5.8	3
<u>enteritidis</u>	1,461	5.5	3	<u>newport</u>	65	4.3	5
<u>infantis</u>	1,376	5.2	4	<u>oranienburg</u>	55	3.7	2
<u>saint-paul</u>	1,198	4.5	6	<u>litchfield</u>	48	3.2	28
<u>heidelberg</u>	1,155	4.3	5	<u>infantis</u>	45	3.0	12
<u>agona</u>	864	3.2	12	<u>saint-paul</u>	45	3.0	5
<u>typhi</u>	680	2.5	11	<u>anatum</u>	39	2.6	6
<u>derby</u>	558	2.1	8	<u>heidelberg</u>	36	2.4	10
<u>javiana</u>	549	2.1	10	<u>montevideo</u>	32	2.1	7
Total	18,506	69.3			797	53.2	
TOTAL (all serotypes)	26,693	100.0		TOTAL (all serotypes)	1,498	100.0	
*Includes var. <u>copenhagen</u>	259	1.0		*Includes var. <u>copenhagen</u>	15	1.0	

Uncommon and Rare Serotypes - Of the 140 uncommon serotypes which were isolated this year, significant increases in the number of isolates were found in S. london, S. oslo, S. poona, S. rubislaw, and S. virchow. Four uncommon serotypes which were isolated frequently last year, but decreased in number in 1973 were S. kottbus, S. minnesota, S. stanley and S. urbana.

Incidence - The annual incidence of reported isolations of salmonella has remained approximately constant since 1963 (Figure 1).

The seasonal incidence of salmonella isolations from humans for the period 1966-1973 shows a consistent pattern, with the greatest number of isolations being reported in July through November and the fewest in February through April (Figure 2).

FIGURE 1. Reported Human and Nonhuman Isolations of Salmonellae, United States, 1963-1973

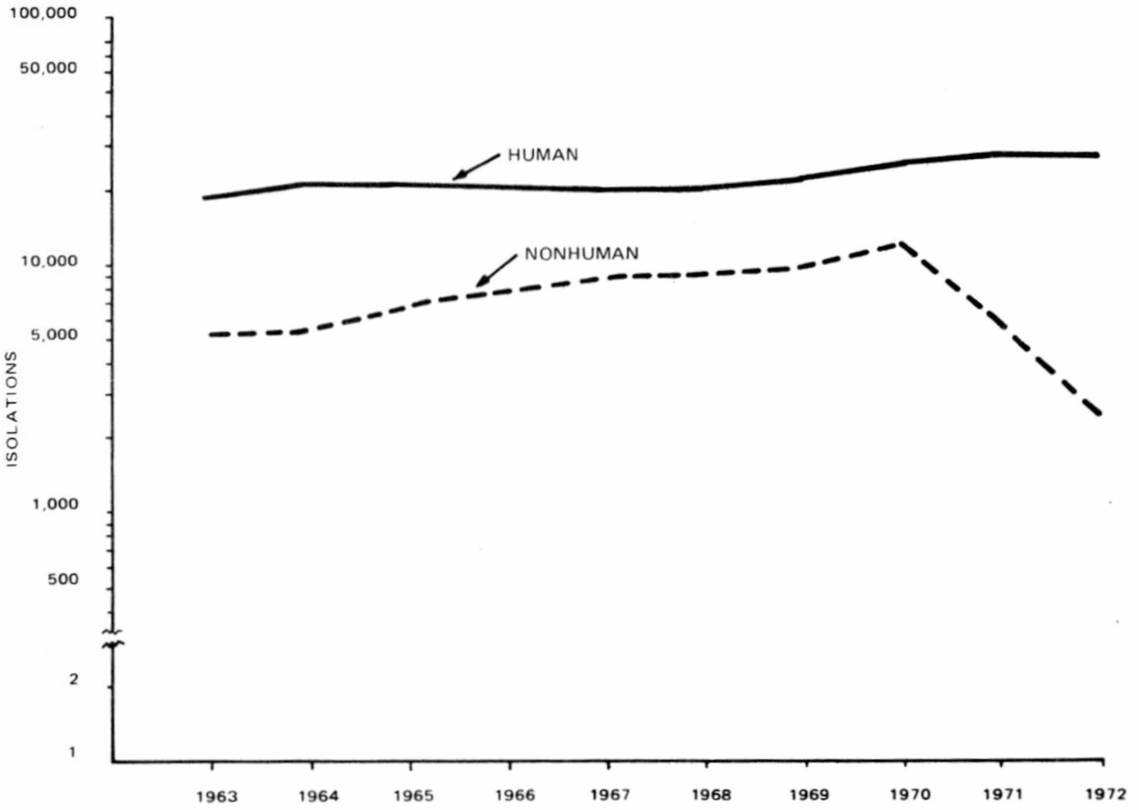
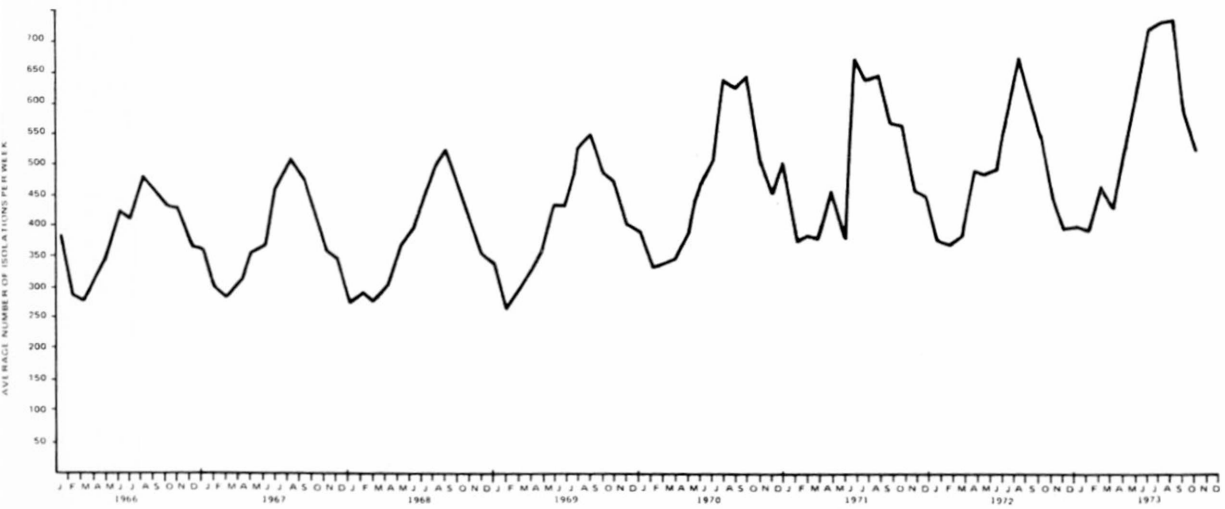


FIGURE 2. Reported Human Isolations of Salmonellae, United States, 1966-1973

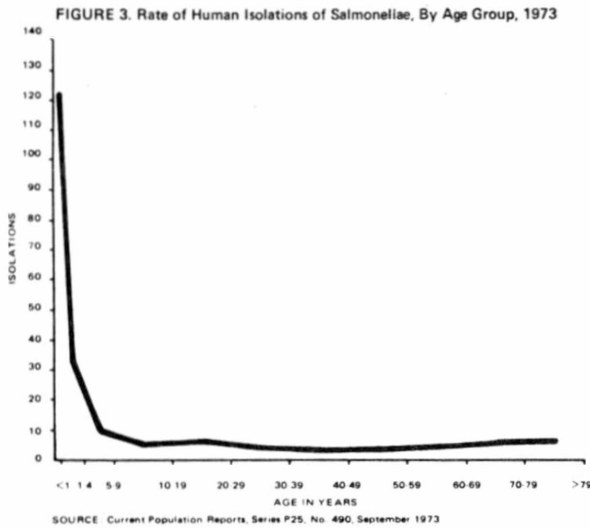


Age and Sex Distribution - Age of the infected person was reported for 19,103 isolations in 1973; 12,623 (66.1%) were from persons less than 20 years of age (Figure 3 and Table VI). This was a decrease of 1.7% for this age group compared with 1971. In 1973 the number of isolations per 100,000 population in each age group closely approximated that for the years 1963 through 1972.

In 1973 sex was specified for 26,497 persons from whom salmonellae were isolated; 13,348 (50.4%) were male and 13,148 were female. The following table shows the age-sex distribution of the 19,103 persons from whom salmonellae were isolated and on whom data indicating sex were reported.

A similar age-sex distribution of persons who reported salmonella infections has been seen in the past 10 years and has been noted in other enteric diseases. This phenomenon is thought to be related to inherently greater susceptibility in males, particularly in infancy and to disproportionately high exposure of adult females who are more apt to come into close contact with sick children.

Once again children less than 5 years had the highest incidence of salmonellosis (Figure 3). These children are more likely to become symptomatic when they become infected with salmonella and thereby are more likely to have a stool culture taken.



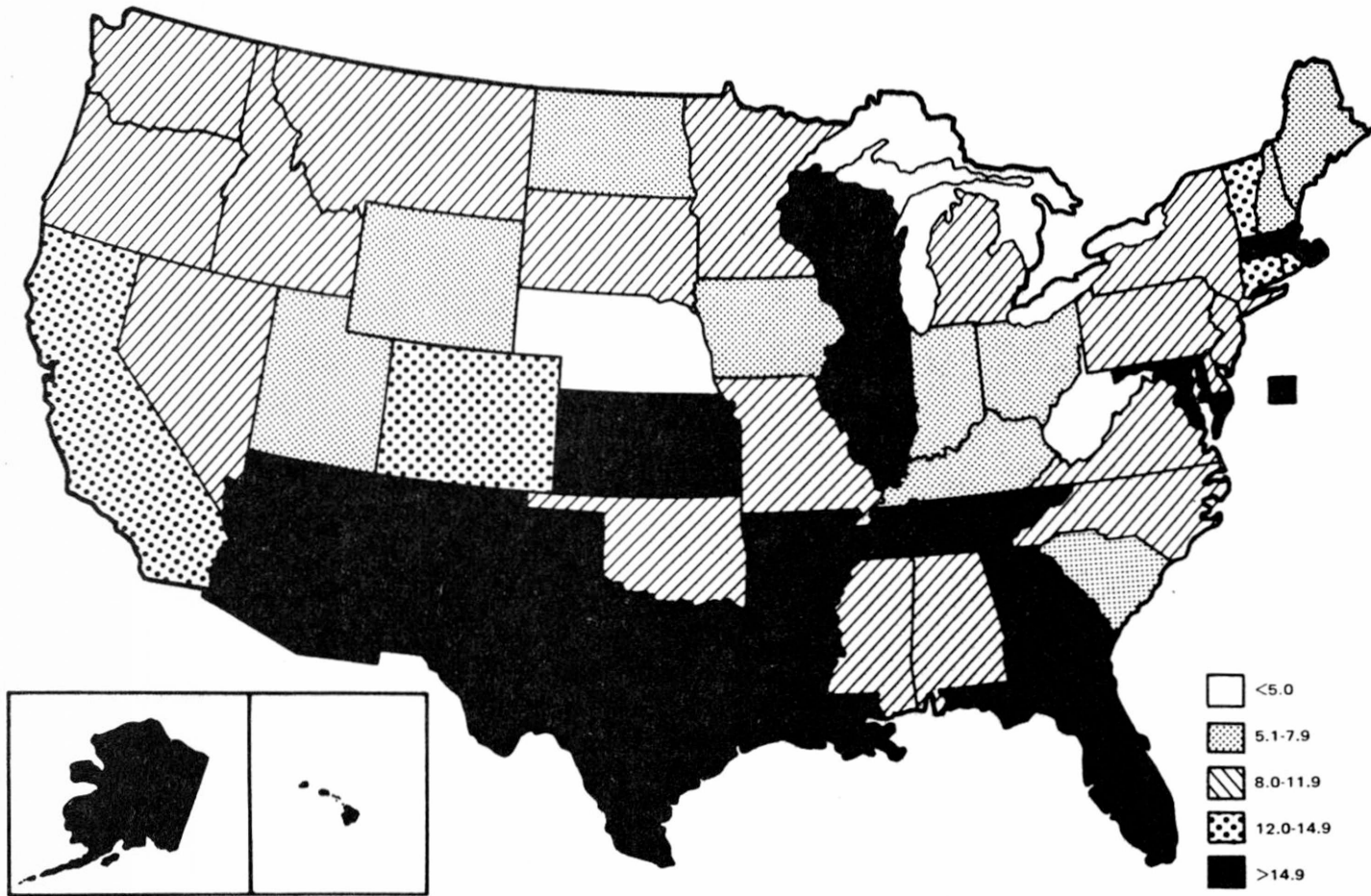
Age (Years)	Male		Female		Total
	Number	Percent	Number	Percent	
Less than 20	6,811	54.0	5,812	46.0	12,623
20 and over	2,795	43.1	3,685	56.9	6,480
TOTAL	9,606	50.3	9,497	49.7	19,103

Geographic Patterns - The geographic distribution of salmonella isolations reported in 1973 appears in Figure 4. California with 2,539 isolates reported the most followed by Texas with 1,929. Other states with more than 1,000 isolations were Pennsylvania, Michigan, Wisconsin, Florida, New York, Illinois, and Texas.

The incidence of the entire country was 12.7 per 100,000. Hawaii, as in past years, reported the highest incidence with 69.0 per 100,000. Other areas reporting incidence rates higher than 20.0 per 100,000 were Louisiana, Wisconsin, Alaska, Arkansas, and New Mexico.

Geographic variations among specific serotypes are seen in Tables I and II. Several serotypes had definite regional patterns which have been observed in previous years. Hawaii reported 114 of 118 (96.6%) isolates of S. weltevreden, 141 of 342 (41.2%) isolates of S. panama, and 38 of 60 (63.3%) of S. oslo. The southern states of Florida, Louisiana, Texas, Arkansas, and Georgia accounted for 960 of the 2,201 (43.6%) of S. newport isolates and 499 of 549 (90.9%) isolates of S. javiana. Florida had 38 of the 61 (62.3%) S. miami isolates.

FIGURE 4. Number of Human Isolations of Salmonellae per 100,000 Population in the United States, 1973



Outbreaks - In 1973 there were 66 salmonellosis outbreaks involving at least 2,754 persons reported to CDC (Table 2). Of these 2,754, 572 (20.0%) were found to have positive cultures. Thus only a small fraction of the reported human isolations of salmonellae in 1973 were from reported outbreaks, an observation compatible with the belief that many outbreaks are never investigated or even recognized. Approximately 14% of the ill persons were reported to have been hospitalized. Nine persons died for a case fatality ratio of 0.53%. In the years 1962-1972, 128 deaths were reported in 27,447 persons involved in 398 outbreaks for a case-fatality ratio of 0.47%.

Of the 66 outbreaks reported, 32 were traced to a causative agent: 12 involved contaminated beef or beef products, 6 involved poultry, and 5 involved dairy products; in 1 outbreak person-to-person spread was thought to be responsible. That ten of these outbreaks (17.0%) in which 177 individuals were ill occurred in hospitals again points out the importance of hospital-acquired salmonellosis.

Eight typhoid outbreaks were reported in 1973. One large typhoid outbreak which occurred in a migrant labor camp in Dade County, Florida, was believed caused by a contaminated water supply. Another common source typhoid outbreak in New Jersey was traced to fish served at a church dinner. In the other 6 outbreaks a common vehicle was not identified; one of these 6 was related to foreign travel.

Massachusetts	May	Suffolk	<u>S. enteritidis</u>	24
New York	"	New York City	<u>S. enteritidis</u>	230
Kentucky	"	Covington	<u>S. typhimurium</u>	3
Texas	"	Marble Falls	<u>S. typhimurium</u>	25
Arkansas	June	Little Rock	<u>S. agona</u>	152
"	"	Little Rock	<u>S. agona</u>	92
"	"	Little Rock	<u>S. agona</u>	25
Illinois	"	Norridge	<u>S. blockley</u>	87
"	"	Broadview	<u>S. blockley</u>	61
"	"	Wheaton	<u>S. blockley</u>	28
"	"	Cook Co.	<u>S. blockley</u>	>163
Missouri	"	Kansas City	<u>S. typhi</u>	3
Pennsylvania	"	Susquehanna	<u>S. typhimurium</u>	78
Pennsylvania	July	Villanova	<u>S. enteritidis</u>	44
Tennessee	"	Nashville	<u>S. typhimurium</u>	12
Georgia	"	Sumpter	<u>S. typhimurium</u>	7
California	"	Carroll Co.	<u>S. typhimurium</u>	8
Alabama-	"	Baldwin Co.		
Florida				
Alabama	"	Mobile	<u>S. typhimurium</u>	5
"	July-	Dothan	<u>S. typhi</u>	5
	August			
Texas	July-	San Antonio	<u>S. montevideo</u>	19
	August			
Oregon	July-	Corvallis	<u>S. infantis</u>	104
	September			
Alaska	August	?	<u>S. typhi</u>	3
Texas	"	Houston	?	80
Idaho	"	Coeur d' Alene	<u>S. london</u>	27

Multiple food vehicles	
Positive cultures from tongue, pastrami, corned beef	Delicatessen
?	Nosocomial
? Homemade ice cream	Family outing
Barbecued beef sauce	Company picnic
Culture positive	
Barbecued beef sauce	Wedding reception
Culture positive) Common food
Barbecued beef sauce	
Culture positive	Club banquet
Beef and gravy	Catered school luncheon
Beef and gravy	Catered graduation dinner
Culture positive) Common food
Beef and gravy	
	Family party 2 of 5 food handlers positive
Beef and gravy	
?	Family outbreak
? Macaroni salad	Wedding reception food handlers culture positive
Food	
?	?
	Day care center for multiply handicapped kids
Homemade ice cream	?
Culture positive	
Person to person	Hospital outbreak
	Common source exposure at hotel
Calf feces	Family exposed to sick calves
?	Common source outbreak at house
?	?
?	Nosocomial
?	
?	Developed with trip to Mexico
	Picnic
Beef - Culture positive	Banquet

Table 2

Salmonella Outbreaks Reported to CDC in 1973

This table lists investigated outbreaks of salmonellosis reported to CDC from various sources. Definitions of cases are not uniform from report to report. This listing should be considered neither comprehensive nor representative of all outbreaks in the United States as most outbreaks are probably not reported to CDC.

<u>State</u>	<u>Month</u>	<u>Location</u>	<u>Serotype</u>	<u>Ill</u>	<u>Mode of Transmission</u>	<u>Comment</u>
California	January	?	<u>S. dublin</u>	22	Contaminated raw milk	Continuous exposure
Maryland	"	Carroll Co.	<u>S. typhimurium</u>	8	? Person to person	Nosocomial
Pennsylvania	"	Harrisburg	<u>S. agona</u>	5	? Raw pork sausage	Pediatric ICU
Washington	"	Colville	<u>S. typhimurium</u>	11	? Person to person	Pediatric ward outbreak
"	"	Colville	<u>S. derby</u>	87	?	Mixed <u>S. flexneri</u> and salmonella outbreak in tour group in Mexico
			<u>S. eimsbuettel</u>			
			<u>S. montevideo</u>			
			<u>S. saint-paul</u>			
California	February	San Bernadino	<u>S. thompson</u>	33	Chicken and potato salad	
Massachusetts	"	Boston	<u>S. agona</u>	3	?	State hospital for mentally retarded
Maryland	"	Montgomery Baltimore Co.	<u>S. virchow</u>	26	? beef	Delicatessen
Hawaii	"	Maui	<u>S. panama</u>			Luau
Rhode Island			<u>S. godesberg</u>			Nursery outbreak
Louisiana		Washington	<u>S. typhimurium</u>			Restaurant
Montana	February- April	Dillon	<u>S. typhimurium</u>	6	? cattle to human	
Florida	February- March	S. Dade Co.	<u>S. typhi</u>		Water	Migrant labor camp
Massachusetts	April		<u>S. chester</u>	61	Roast beef sandwich culture positive	Roadside restaurant
California	"	Los Angeles	<u>S. chester</u>	66	Turkey meal	Geriatric group
Utah	"		<u>S. typhimurium</u>	2	?	Farm family outbreak
Maryland	"	Frederick Co.	<u>S. typhi</u>	1	Previously identified carrier	Farm outbreak
Pennsylvania	"	Collegeville	<u>S. agona</u>	>18	Chicken	Outbreak after family dinner

Nebraska	August	Aulurm	<u>S. enteritidis</u>	7	Homemade ice cream Culture positive	Family outbreak
California	"	Beverly Hills	<u>S. thompson</u>	>25	Custard pie Culture positive	Outbreak in patrons of bakery
Oregon	"	Grants Pass	<u>S. infantis</u>	123	Roast beef Culture positive	Catered picnic
Minnesota	September	Owatonna	<u>S. agona</u> <u>S. infantis</u> <u>S. schwarzengrund</u>	126	Potato salad and chicken dressing	Smorgasbord and picnic
Maine	"	Portland	<u>S. typhimurium</u>	35	Egg nog	Hospital outbreak
Puerto Rico	"	?	<u>S. typhi</u>	2	?	
Kansas	"	Wichita	<u>S. agona</u>	20	?	
Pennsylvania	"	Somerset	<u>S. thompson</u>	>25	Roast beef	Restaurant outbreak - 28 of 39 food handlers culture positive
Louisiana	"	New Orleans	<u>S. agona</u>	>5	? mayonnaise	Restaurant patrons
Tennessee	"	Clarksville	<u>S. infantis</u>	19	Ice cream	Church supper
Colorado	October	La Plata	<u>S. enteritidis</u>	6	Homemade Indian bread	
Maryland	"	Baltimore	<u>S. infantis</u>	9	? Person to person	Geriatric facility
Illinois	"	Cook Co.	<u>S. enteritidis</u>	10	Food	Common meal
Alabama	"	Huntsville	<u>S. typhi</u>	2	?	
Rhode Island	"	?	<u>S. bareilly</u>	16	? food	Outbreak aboard Caribbean cruise ship
New Jersey	"	?	<u>S. typhimurium</u>	50	Meat slider	Delicatessen
Florida	"	Miami	<u>S. thompson</u>	>17	? food	Meal aboard plane flight
South Carolina	"	Richland Co.	<u>S. typhimurium</u>	5	Unknown	Cases in elementary school
Louisiana	November	New Orleans	<u>S. infantis</u>	69	Food	
New Jersey	"	Burlington	<u>S. typhi</u>	19	Fish whiting	Church dinner
Oregon	"	Corvallis	<u>S. manhattan</u>	60	Turkey	Banquet
Virginia	"	Buchanan	<u>S. reading</u>	470	Turkey salad	
Texas	December	?	<u>S. typhimurium</u>	?	? Person to person	Pediatric ward

B. Nonhuman

In 1973, 1,498 salmonella isolates from nonhuman sources were reported to CDC (Tables V, VI, VII, VIII). This represents a 35.4% decrease from the 2,318 isolations reported in 1972. The decrease in the number of isolations reported over the past 3 years reflects the scaling down of the cooperative state-federal salmonella program sponsored by the USDA. The true incidence of nonhuman salmonellosis is not felt to have changed significantly in the 3 years. The source of the nonhuman isolates are given in Tables V, VI, and VII. Twenty-eight percent of all nonhuman salmonella isolates were obtained from domestic animals, 19.2% from animal feed, 10.3% from birds, and 15.3% from fish and reptiles.

Sources

Domestic Fowl and Their Products - In 1973, 37 salmonella isolations were reported from domestic fowl and 6 from eggs and egg products. S. typhimurium was the most commonly reported serotype from chickens with 9 (27.3%).

Domestic Animals - In 1973 the serotypes most often reported among the 52 isolations from swine were S. cholerae-suis (including var. kunzendorf) with 20 (38.5%) and S. derby with 9 (15.4%).

The most commonly reported serotypes isolated from cattle in 1973 were S. typhimurium (including S. typhimurium var. copenhagen) with 151 isolations (71.9%), S. dublin with 13 (6.2%), S. anatum with 9 (4.3%), and S. newport and S. heidelberg with 8 each (3.8%).

Fish, Reptiles and Their Environment - There were 229 reported isolations from fish and reptiles and their environment. Turtles accounted for the majority of these isolates and constituted a significant source of infection to children keeping these animals as pets. The most commonly isolated serotype from turtles and their environment were S. litchfield with 47 (20.5%), S. urbana with 20 (8.7%), S. java and S. manhattan with 17 (7.4%) and S. typhimurium with 16 (7.0%).

Animal Feed and Feed Ingredients - In 1973 there were 288 salmonella isolations from animal feed compared with 756 in 1972. The most commonly reported serotypes were S. senftenberg with 68 (23.6%), S. oranienburg with 31 (10.8%), and S. montevideo with 20 isolations (6.9%).

V. SPECIAL REPORTS

A. Summary of Salmonella Isolations from Humans 1967-1973

For this period, 325 different salmonella serotypes were recovered from humans. A list of reported serotypes with the number of isolations in each year is presented in Table IX.

B. Institutional Salmonellosis

Between 1963 and 1972, 112 (28%) of 395 outbreaks of salmonellosis reported to CDC occurred in institutions (hospitals, mental institutions, and nursing homes); 3,496 cases were associated with these 112 outbreaks. Acute-care hospitals, pediatric wards, and newborn nurseries accounted for approximately equal numbers of outbreaks; together, such outbreaks accounted for almost two-thirds of all reported institutional outbreaks. The average number of persons affected per outbreak was largest for psychiatric institutions (255 cases per outbreak), reflecting large-scale common vehicle episodes. While fatalities due to nontyphoid salmonellosis are very rare among those not in institutions, case-fatality ratios among patients in nursing homes and nurseries were 8.7% and 7.0%, respectively. Constitutional factors in the host, such as infancy or old age; antibiotic or immunosuppressive therapy; pre-existing malignancy; immunopathy or gastrointestinal disease; and other risk factors commonly found in hospitalized patients all presumably contribute to the increased susceptibility and to this high case-fatality rate.

Nosocomial outbreaks fall into 2 patterns: large common-source outbreaks which usually involve adults, or relatively small outbreaks propagated by cross infection.

Common-source outbreaks are characterized by a sudden explosive increase in the number of cases of salmonellosis usually within 6-48 hours after exposure to the contaminated item. Outbreaks caused by cross-infection occur sporadically and in small clusters over a period of time. Cross-infection epidemics accounted for the largest number of reported outbreaks (46/112) demonstrating that nosocomial salmonellosis is often spread among patients in a ward, apparently by person-to-person contact or by fomites. Common vehicles accounted for 30 of the 112 reported outbreaks in hospitals and custodial institutions.

Prevention of common-source outbreaks depends on proper food handling procedures, provision of suitable facilities for culturing food handlers with diarrhea, prohibition of their working in dietary departments during such episodes without financial penalty to the employee, and periodic courses in the principles of good hygiene for dietary employees.

Despite identification of the cause of the outbreak and efforts to apply usual control measures, cross-infection outbreaks often persist especially in closed, crowded settings. Procedures of isolation may be difficult to enforce. Transmission of organisms on the hands of hospital personnel is facilitated when the ratio of patient-to-staff personnel is high and sinks for handwashing too few or inconveniently placed. In these situations it may be necessary to close the ward to further admissions or to apply cohort nursing practices in which those caring for patients with salmonellosis do not come into contact with newly admitted or other uninfected patients.

As therapeutic advances increase, the proportion of hospitalized patients who live despite multiple causes of debility, the threat of salmonellosis will increase. Surveillance of hospital infection, proper control programs, and good hygienic practices are essential in all institutions.

(Excerpted from Baine WB, Gangarosa EJ, Bennett JV, et al: Institutional salmonellosis. J Infect Dis 128(3):357-360, 1973)

TABLES

TABLE 1. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, 1973

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																																	
	NEW ENGLAND					MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL					SOUTH ATLANTIC													
	ME	NH	VT	MAS	RI	CON	NYA	NYB	NYC	NJ	PA	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA		
<i>anatum</i>	2		1	22	2	2	1	18	11	9	18	16	4	27	15	6	4	2	6				1	18					3	2	10	20		
<i>bareilly</i>				1	1	2		9	2	5	3	2		3	8	1	1		5			3	1	1	10			2	12	2				
<i>blockley</i>	5	1	13	2	14			20	20	8	17	6	11	29	5	3	4		11	5			4	1	16	4	3	12	1	8	30			
<i>braenderup</i>				6	2	5	2	1	4	1	13	1		3	3	3	4			1			1	5	4		1	6	1					
<i>breedenev</i>				4		3	1	5	7	2	8	4	1	13	12	2	1	1	2					4		1	1	2	9	4				
<i>chester</i>	1			78		8				9	23			1	5		3		1	1				14	5	4	6	1	3	5				
<i>cholerae-suis v kun</i>						1				1				7	2													2	3	6				
<i>cubana</i>						4		1	1		3			3	5		1				1					1	1				2			
<i>derby</i>				5		8	1	26	29	20	36	22	3	41	27	7	5		19				3	4	27	2	19	2	1	25	52			
<i>enteritidis</i>	2	1	4	85	12	41		109	85	57	163	47	20	259	48	35	18	20	40	4	7	6	18	4	53	2	16	2	17	8	28	23		
<i>glive</i>	1			4				1	3	2	1			1	1	1	2		1						2		2		2					
<i>heidelberg</i>	4	1	46	5	18			35	24	53	42	36	11	124	73	35	37	7	28	1	1		25	4	52	15	1	29	7	55	17			
<i>indiana</i>				2		4		8	4	3	2	1	3	4	4	1									5			2	2	3	8			
<i>infantis</i>	2	1	47		25	1	27	22	39	53	59	22	80	54	57	34	11	18	5	3		23	78	4	39		33	5	51	75				
<i>java</i>				11		7		4	3	7	18			31	2	18	12	9	17	1	1		2	2	2	2		1	10	10				
<i>javiana</i>				2		1		1		6	6			6	4	2	3		8				14	2	5	5			6	52	122			
<i>litchfield</i>				2	6	1	3		9	4	6	10	7	6	10	9	4	3	3	3			1	1	1	6		4	2	8	9			
<i>livingstone</i>								1						3																	1			
<i>manhattan</i>				4		1		12	7	4	6	12	1	29	12	4	2	1	2				2	1	12	4		10	1	6	9			
<i>miami</i>				1		1				2	2			2	1		1													11	38			
<i>mississippi</i>															1			1													42	7		
<i>montevideo</i>	2		1	14	1	7		18	10	12	11	6	5	12	14	11	3	1	7				3	3	9	12	3	9	5	10	39			
<i>muenchen</i>		1	6	14		4		6	10	23	32	1	6	48	13	11	6	2	4	1			15	13	2	7		10	3	22	24			
<i>newington</i>				1		3	1	1		1	2								1											2				
<i>newport</i>	1	3	55	3	28	5	44	22	41	53	54	13	63	46	71	22	13	25	5	1			29	2	27	1	36	1	44	15	129	203		
<i>oranienburg</i>				9		5	1	5	11	16	15	12	13	21	19	7	3	2	21				5	1	10	1	3	1	9	23	23			
<i>panama</i>				4	3	7		6	5	4	8	2	1	7	6	1	3	1	5	1				2			1	4	4					
<i>paratyphi B</i>				2	3	2		4	2		14	10	2	15		2	1	9								1	15	5	5					
<i>reading</i>				8					1	19				7		3		1					2				16	4	4			1		
<i>saint paul</i>	5	2	48	2	9		37	38	48	75	32	12	97	86	47	21	9	26	4				3	6	77	1	21	6	26	5	40	88		
<i>san-diego</i>			1	9		1	1	8	2				4	7	19	1	2							1		1	5		2	1	4	6		
<i>schwarzengrund</i>	1			9		2		2	1	4	7	6	1	7	6	13	1		2					2				6	1	1				
<i>senftenberg</i>				9		1		3	1	7	3	1	1	7	7	4	6	1	5	1			6	2	3				1	7	17			
<i>tennessee</i>				1				4	2	6	5	1		3									1		3	1		1	1	1	3	2		
<i>thompson</i>	8			26		4		9	5	7	61	5	9	28	27	24	4	4	7	2			3		20	4	11		11	2	9	13		
<i>typhi</i>	2			23		7	23	19	31	10	13	18		32	17	4	3	1	12				3	2	8	5	4	6	13	5	10	67		
<i>typhimurium</i>	19	3	21	316	41	149	9	215	162	392	333	283	145	529	293	675	151	62	183	9	44		131	21	207	6	189	31	186	44	215	329		
<i>typhimurium v cop</i>	6			19		7				19					27		5	24	2		1		20	3				3	1					
<i>weltvredden</i>															1																1			
<i>worthington</i>				3								1		2	8															3	5	3	3	
TOTAL	61	5	50	907	72	384	45	667	525	820	1,062	659	304	1,552	885	1,057	366	178	470	38	63	6	318	56	676	32	455	71	458	132	830	1,250		
ALL OTHER*	1	55	10	66	53	34	306	74	36	57	165	31	36	203	131	75	44	43	52	3	2	56	23	7	124	113	38	5	58	15	77	96		
TOTAL	62	60	60	973	125	418	351	741	561	877	1,227	690	340	1,755	1,016	1,132	410	221	522	41	65	62	341	63	800	145	493	76	516	147	907	1,346		

TABLE I - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																	1973 TOTAL	% OF 1973 TOTAL	1972 TOTAL	% OF 1972 TOTAL	SEROTYPE					
EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN					PACIFIC													
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK	HAW						
2	3	2	1	2	8	1	38	1	1		4		7	1		1		41	1	5	339	1.3	373	1.4	<i>anatum</i>	
	6	1	3	4	7	3	5			1			1					8	1	1	113	0.4	79	0.3	<i>harelly</i>	
1	6	4	1	3	12	2	7				1		4					22	1		317	1.2	452	1.7	<i>blockley</i>	
2	1	1			4	1	12										2	12		6	108	0.4	132	0.5	<i>braenderup</i>	
	3			6	11	1	8				2		3			2	1	18	1	7	150	0.6	208	0.8	<i>bredney</i>	
1							1				1					2	6	79			258	1.0	132	0.5	<i>chester</i>	
2							1														26	0.1	25	0.1	<i>cholerae suis v kun</i>	
	2				1		1														1	28	0.1	68	0.3	<i>cubana</i>
	8	2	7	2	8		44				1		9	1		12		48	1	31	558	2.1	628	2.4	<i>derby</i>	
11	33	12	1	7	7	5	26	8	10	1	17		16	3		8	3	58		1	1,461	5.5	1,690	6.5	<i>enteritidis</i>	
1		1	2	1	12		23				1		1			1		11		3	81	0.3	95	0.4	<i>gire</i>	
3	53	22	7	18	32	8	51	1	2		1		34	3	4	18	13	88	2	9	1,155	4.3	1,465	5.6	<i>heidberg</i>	
	8	1			9																74	0.3	154	0.6	<i>indiana</i>	
11	82	32	4	7	51	6	55		2		12		21	4	1	19	81	106	2	12	1,376	5.2	1,657	6.3	<i>infantis</i>	
10	22	5	7	6	19		5	1			6		6	2		1	10	49	3	5	325	1.2	464	1.8	<i>java</i>	
1	12	10	6	39	38		168				1		13	1	1	1	3	10			549	2.1	563	2.2	<i>jariana</i>	
2	8	1	2	2	9		6	1	1				2			1		12	1	2	168	0.6	173	0.7	<i>litchfield</i>	
	1	1					3						1			1	10	1			26	0.1	53	0.2	<i>livingstone</i>	
2	5				1	1	2	1					1			1	1	27		2	186	0.7	324	1.2	<i>manhattan</i>	
																					61	0.2	88	0.3	<i>miami</i>	
	11	16	6		42		4														130	0.5	107	0.4	<i>mississippi</i>	
	21	6		4	21	2	96		2		10		7	1		20	2	42		2	464	1.7	363	1.4	<i>montevideo</i>	
2	4	31	6	5	26	1	28				2		6		1	1	3	27		3	430	1.6	426	1.6	<i>munichen</i>	
					2		3				1										6	0.1	43	0.2	<i>newington</i>	
5	36	30	16	97	125	35	406	7	3	6	14		37	4		15	12	137	1	17	2,058	7.7	2,201	8.4	<i>newport</i>	
5	3	6	8		14	11	69		8		7		14	1		4	4	48		1	439	1.6	621	2.4	<i>oranienburg</i>	
1	9	2			3	6	40		3		7		3	1	1	8		42		141	342	1.3	229	0.9	<i>panama</i>	
					5	41	1	1			4		1			5		9		1	160	0.6	208	0.8	<i>paratyphi B</i>	
						3	2	1			2		1			2	6	28			112	0.4	96	0.4	<i>reading</i>	
10	39	18	4	9	35	6	28	2	1		9		2	4		34	2	107	5	12	1,198	4.5	1,013	3.9	<i>saint-paul</i>	
	5	3			2	6		1					3	2	1	7		57		3	165	0.6	308	1.2	<i>san-diego</i>	
					6	3		1			1					1	1	16			102	0.4	58	0.2	<i>schwarzengrund</i>	
				1	2	1	12			1	12		3			4	1	26		2	161	0.6	219	0.8	<i>senftenberg</i>	
				1	3	1							1			1		8		2	57	0.2	52	0.2	<i>tennessee</i>	
2	7	5	5	5	26	2	17	2			16		1	1		7		106	9	19	533	2.0	675	2.6	<i>thompson</i>	
14	16			25	18	5	52		1		1	10	8			7	4	171	9	1	680	2.5	535	2.0	<i>typhi</i>	
109	247	143	85	114	167	102	466	35	41	2	182		60	24	16	147	36	876	19	84	8,348	31.3	6,460	24.7	<i>typhimurium</i>	
11	34		1	13	5	1	2	1	6		13		18		3			9		5	259	1.0	278	1.1	<i>typhimurium v cop</i>	
					3		2				3		1	2		1		9			114	0.4	112	0.4	<i>weltevreden</i>	
																					55	0.2	46	0.2	<i>worthington</i>	
208	688	362	172	371	729	205	1,734	63	85	11	331	10	285	55	29	330	203	2,317	60	492	23,194	86.9	22,873	87.6	TOTAL	
8	82	37	13	120	180	18	195	3	2	15	8	322	30	4	13	39	16	222	17	66	3,499		3,237		ALL OTHER*	
216	770	399	185	491	909	223	1,929	66	87	26	339	332	315	59	42	369	219	2,539	77	558	26,693		26,110		TOTAL	

**TABLE III SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY
FROM HUMAN SOURCES, 1973**

REPORTING CENTER	GROUP															TOTAL
	A	B	C	C1	C2	D	E	E1	F	G	H	I	O	W	UNK	
ALABAMA		1				1	1								1	4
ALASKA		4	3	1	1	2										11
ARIZONA															1	1
ARKANSAS		9		3	4						1					17
CALIFORNIA		5		2									1		2	10
CONNECTICUT		3													1	4
DELAWARE								1								1
DISTRICT OF COLUMBIA	1	40	4	13	11	15	1								24	109
FLORIDA							1								5	6
GEORGIA															4	4
ILLINOIS		9			1							1			2	13
IOWA		11			3	3	1			1					7	26
LOUISIANA				1												1
MARYLAND		2	1	1											3	7
MASSACHUSETTS		4		1											2	7
MICHIGAN		3	1												1	5
MINNESOTA		1													1	2
MISSISSIPPI															9	9
MISSOURI		1													4	5
NEBRASKA		33		8	3	11			1							56
NEVADA		1		1						1						3
NEW HAMPSHIRE		37		7	6	3									2	55
NEW MEXICO	2	220		35	36	10	12			5					2	322
NEW YORK - A		189	5	13	17	19	5			1	1	1			53	304
NEW YORK - BI		4		2	2										2	10
NEW YORK - C		1	1												1	3
OHIO		1														1
OKLAHOMA									1							1
OREGON		3	1		2					1					4	11
RHODE ISLAND		24	1	10	2	4	3								8	52
TENNESSEE		5				2									1	8
TEXAS		4		2	7	3					1			1	7	25
UTAH				1		2										3
VERMONT															9	9
VIRGINIA										1						1
WISCONSIN		7	1	1							1				23	33
WYOMING		4	3		5	1									2	15
TOTAL	3	626	21	102	100	76	24	1	2	10	4	2	1	1	181	1,154

TABLE IV AGE AND SEX DISTRIBUTION OF INDIVIDUALS FROM WHOM ISOLATIONS OF SALMONELLA WERE REPORTED, 1973

AGE (YEARS)	MALE	FEMALE	UNKNOWN	TOTAL	PERCENT	CUMULATIVE PERCENT
< 1 YEAR	2,193	1,941	0	4,134	21.6	21.6
PERCENT	16.4	14.8	0.0	15.6		
1-4 YRS	2,487	2,078	0	4,565	23.9	45.5
PERCENT	18.6	15.8	0.0	17.2		
5-9 YRS	1,002	770	0	1,772	9.3	54.8
PERCENT	7.5	5.9	0.0	6.7		
10-19 YRS	1,129	1,023	0	2,152	11.3	66.1
PERCENT	8.5	7.8	0.0	8.1		
20-29 YRS	906	1,145	0	2,051	10.7	76.8
PERCENT	6.8	8.7	0.0	7.7		
30-39 YRS	495	603	0	1,098	5.7	82.5
PERCENT	3.7	4.6	0.0	4.1		
40-49 YRS	352	510	0	86.2	4.5	87.0
PERCENT	2.6	3.9	0.0	3.3		
50-59 YRS	342	496	0	838	4.4	91.4
PERCENT	2.6	3.8	0.0	3.2		
60-69 YRS	346	436	0	782	4.2	95.6
PERCENT	2.6	3.3	0.0	3.0		
70-79 YRS	246	309	0	555	2.9	98.5
PERCENT	1.8	2.3	0.0	2.1		
> 79 YRS	108	186	0	294	1.5	100.0
PERCENT	0.8	1.4	0.0	1.1		
SUBTOTAL	9,606	9,497	0	19,103		
PERCENT	72.0	72.2	0.0	72.1		
CHILD (UNSPECIFIED)	70	47	0	117		
PERCENT	0.5	0.4	0.0	0.4		
ADULT (UNSPECIFIED)	67	97	0	164		
PERCENT	0.5	0.7	0.0	0.6		
UNKNOWN	3,605	3,508	0	7,113		
PERCENT	27.0	26.7	0.0	26.8		
TOTAL	13,348	13,149	0	26,497		
PERCENT	100.0	100.0	0.0	100.0		

TABLE V COMMON SALMONELLA SEROTYPES ISOLATED FROM NONHUMAN SOURCES (BY STATE), 1973

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																																					
	NEW ENGLAND					MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL					SOUTH ATLANTIC																	
	ME	NH	VT	MAS	RI	CON	TOT	NVA	NYB	NYC	NJ	PA	TOT	OHI	IND	ILL	MIC	WIS	TOT	MIN	IOW	MO	ND	SD	NEB	KAN	TOT	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA	TOT	
<i>anatum</i>						0						3	3	7		1			8		2	1					3			5						5		
<i>bareilly</i>						0		3					3	1		2			3							1	1										0	
<i>blockley</i>						2	2						0			7			7									0									0	
<i>braenderup</i>						0							2	2					0									0			1					1	2	
<i>brederes</i>						0							1	1	2			1	3				1				1			1				1		2		
<i>chester</i>				2			2						0						0									0									0	
<i>choleraesuis v. kun</i>							0						0						0									0									0	
<i>chobana</i>							0						0	2					2									0									0	
<i>derby</i>							0						1	1	4			2	2	8								0				4			2		6	
<i>enteritidis</i>				2		5	7						5	5	5					5								0			3						3	
<i>grev</i>							0						0	1		1			2								0				3					3		
<i>hisslberg</i>							0						0	1		1			2			2				2	4			14				1	15			
<i>indiana</i>							0						0						0								0				9					9		
<i>intanitis</i>						2	2						0	10		2			12			1				1		2		5				2		9		
<i>java</i>						1	1						1	1		2			2			1				1										0		
<i>javiana</i>							0						0						0							1	1										0	
<i>litchfield</i>						3	3						0	2					2								0			3					8	11		
<i>livingstone</i>							0						0	11					11								0									0		
<i>manhattan</i>						1	1						0	2					2							1	1						1			1		
<i>miami</i>							0						0						0								0								2		2	
<i>mississippi</i>							0						0						0								0										0	
<i>montevideo</i>							0						5	5	7				1	8						0		1		6						2	9	
<i>muenchen</i>							0						3	3	1		2	15	1	18						1	1								1	1		
<i>newington</i>							0						0	1					1							1	1									1	1	
<i>newport</i>				2	1	8	11						0	4		2	1	4	11			3				1	6		1	2					1	4		
<i>orangeburg</i>				1	1		2			1			6	7	21			11	32							0										3		
<i>panama</i>						1	1						0						0							0			3								0	
<i>paratyphi B</i>							0			1			1	2			1	3								0											0	
<i>reading</i>							0						0						0							0											5	5
<i>saint paul</i>							0						0	8		1	16	25								1	1									5	6	
<i>san diego</i>							0						0			2	1	3								0											0	
<i>shwarzengrund</i>				1			1						0	5				1	6							0											0	
<i>swifterberg</i>	1						1						2	2	17				3	20						0										1	1	
<i>tennessee</i>							0						0						0							0			1								0	
<i>thompson</i>	1						1						1	1					0							0				2						2	2	
<i>typhi</i>							0						0						0							0											0	
<i>typhimurium</i>				10			14	24		1		6	7	14	110	1	6	4	11	132					2			9	11		6	11		5	2		10	14
<i>typhimurium v. csp</i>						1		1					0						0							0											0	0
<i>weltveden</i>							0						0						0							0											0	0
<i>worthington</i>							0						0	1		1	2	4								0											0	0
TOTAL	2	0	10	8	3	37	60	0	6	0	7	36	49	225	1	30	54	23	333	0	2	11	0	0	0	20	33	0	10	0	80	0	5	2	4	33	134	
ALL OTHER*	0	7	0	0	0	2	9	6	0	0	1	37	44	76	0	18	12	3	109	0	0	5	0	0	0	13	18	0	4	5	15	0	0	1	3	6	34	
TOTAL	2	7	10	8	3	39	69	6	6	0	8	73	93	301	1	48	66	26	442	0	2	16	0	0	0	33	51	0	14	5	95	0	5	3	7	39	168	

TABLE VI COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES,
(BY CATEGORY), 1973

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>	2			9	1		12	2		3	5
<i>bareilly</i>				1			1	8		1	9
<i>blockley</i>	2						2				-
<i>braenderup</i>						1	1				-
<i>bredeney</i>	2		3	1		2	8	6		6	12
<i>chester</i>						1	1				-
<i>cholerae-suis v kun</i>							-				-
<i>cubana</i>			1				1				-
<i>derby</i>			8			1	9	3		6	9
<i>enteritidis</i>			1	2		13	16				-
<i>give</i>						2	2				-
<i>heidelberg</i>		3	1	8		3	15				-
<i>indiana</i>	2						2				-
<i>infantis</i>	2					2	4		7		7
<i>java</i>						2	2				-
<i>javiana</i>					1	1	2				-
<i>litchfield</i>							-				-
<i>livingstone</i>	1					1	2	1		8	9
<i>manhattan</i>	3		1				4	1			1
<i>miami</i>							-				-
<i>mississippi</i>							-				-
<i>montevideo</i>						2	2	12		8	20
<i>muenchen</i>						5	5				-
<i>newington</i>		1					1				-
<i>newport</i>			1	8		9	18	1			1
<i>oranienburg</i>	1						1	5		26	31
<i>panama</i>			4			5	9	1			1
<i>paratyphi B</i>							-				-
<i>reading</i>							-				-
<i>saint-paul</i>	2		1	4		7	14	1			1
<i>san-diego</i>				1		2	3				-
<i>schwarzengrund</i>						2	2			4	4
<i>senftenberg</i>			2	1	3	5	11	49	2	17	68
<i>tennessee</i>							-	7			7
<i>thompson</i>	1					1	2			1	1
<i>typhi</i>							-				-
<i>typhimurium</i>	9		5	141	23	62	240	1		7	8
<i>typhimurium v cop</i>				10		1	11				-
<i>weltevreden</i>			2			6	8				-
<i>worthington</i>						2	2	3			3
TOTAL	27	4	30	186	28	138	413	101	2	94	197
ALL OTHER*	6	-	22	24	2	32	86	39	2	50	91
TOTAL	33	4	52	210	30	170	499	140	4	144	288

*See Table

TABLE VI - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	1973 TOTAL	1972 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
9	2		1	6		4	11	2	39	73	<i>anatum</i>
1				4		5	5		17	24	<i>bareilly</i>
1	13					3	7		10	11	<i>blockley</i>
1				1				2	15	17	<i>braenderup</i>
1							1		24	62	<i>bredency</i>
				2			2		3	2	<i>chester</i>
1										3	<i>cholerae-suis v kun</i>
2	2			4		3	3	1	6	46	<i>cubana</i>
3	2		1			3	7	2	31	65	<i>derby</i>
						3	4	3	28	20	<i>enteritidis</i>
3	2			1			1	2	10	29	<i>give</i>
16			1	1			2	3	36	65	<i>heidelberg</i>
9				2			2		13	3	<i>indiana</i>
3	5		5	7		8	20	6	45	59	<i>infantis</i>
	17			1			1	2	22	36	<i>java</i>
1	1					4	4		8	7	<i>javana</i>
	47			1			1		48	14	<i>litchfield</i>
								1	12	9	<i>livingstone</i>
1	17			2			2	2	27	31	<i>manhattan</i>
								2	2		<i>miami</i>
6				1						1	<i>mississippi</i>
1	5					2	2	3	32	69	<i>montevideo</i>
1								16	29	25	<i>muenchen</i>
16	14					6	6	10	3	7	<i>newington</i>
									65	78	<i>newport</i>
3	5			2			2	13	55	95	<i>oranienburg</i>
	6								10	4	<i>panama</i>
1			2	1		2	5	1	7	18	<i>paratyphi B</i>
7			1	2			3	20	6	9	<i>reading</i>
									45	80	<i>saint-paul</i>
1	2								6	27	<i>san-diego</i>
						1	1		7	26	<i>schwarzengrund</i>
1						2	2	5	87	88	<i>senftenberg</i>
	4		2						7	33	<i>tennessee</i>
						4	6	1	14	26	<i>thompson</i>
28	16		1	2	1	4	8	30		4	<i>typhi</i>
	3								330	305	<i>typhimurium</i>
	7								1	15	<i>typhimurium v cop</i>
	2								1	16	<i>weltevreden</i>
									7	26	<i>worthington</i>
119	169	-	14	40	1	54	109	130	1,137	1,517	TOTAL
36	60	6	4	11	-	34	55	33	361	801	ALL OTHER *
155	229	6	18	51	1	88	164	163	1,498	2,318	TOTAL

TABLE VII OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES,
(BY CATEGORY), 1973

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>agona</i>			1			3	4	1		1	2
<i>alachua</i>						1	1	2		5	7
<i>albany</i>				1			1		1	1	2
<i>amsterdam</i>							1	2		2	4
<i>aqua</i>							—				—
<i>berta</i>				1			1				—
<i>binza</i>							—	1		11	12
<i>bornum</i>				1			1				—
<i>brandenburg</i>						1	1				—
<i>cairo</i>							—				—
<i>california</i>	1					1	2	1			1
<i>carrau</i>						1	1				—
<i>cerro</i>						2	2	1			1
<i>cholerae-suis</i>			20				20				—
<i>concord</i>							—				—
<i>degania</i>							—				—
<i>drypool</i>						2	2	2		1	3
<i>dublin</i>				13			13				—
<i>duesseldorf</i>							—				—
<i>eastbourne</i>							—				—
<i>eimsbuettel</i>						2	2	9		3	12
<i>gaminara</i>				1			1				—
<i>good</i>							—				—
<i>habana</i>						1	1			2	2
<i>halle</i>							—				—
<i>hartford</i>							—				—
<i>jangwani</i>							—				—
<i>johannesburg</i>							—				—
<i>kaapstad</i>							—				—
<i>kandla</i>							—				—
<i>kentucky</i>	1			1			2	2		1	3
<i>kenya</i>							—				—
<i>lexington</i>						4	4			3	3
<i>lille</i>				1			1				—
<i>lohbruegge</i>							—				—
<i>lomita</i>						1	1				—
<i>london</i>	1			1			2			4	4
<i>luciana</i>							—				—
<i>manila</i>							—	3		1	4
<i>matopeni</i>							—				—
<i>meleagridis</i>							—	1			1
<i>minneapolis</i>							—			1	1
<i>minnesota</i>					2		2			1	1
<i>mission</i>							—				—
<i>muenster</i>						1	1				—
<i>new-brunswick</i>							—	1			1
<i>norwich</i>						1	1				—
<i>ohio</i>							—	8	1	1	10
<i>omifisan</i>							—				—
<i>onderstepoort</i>							—				—
<i>orion</i>						1	1			2	2
<i>oslo</i>						1	1				—
<i>pomona</i>							—				—
<i>poona</i>						1	1				—
<i>pramiso</i>							—				—
<i>pullorum</i>	1						1				—
<i>rubislaw</i>	1					2	3				—
<i>saphra</i>							—				—
<i>stegburg</i>			1			4	5	1		5	6
<i>sundsvall</i>							—				—
<i>thomasville</i>							—	4		4	8
<i>uganda</i>							—			1	1
<i>urbana</i>							—				—
<i>usumbura</i>							—				—
<i>virchow</i>							—				—
<i>westerstede</i>	1						1				—
<i>zanzibar</i>							—				—
TOTAL	6	—	22	20	2	30	80	39	2	50	91
NOT TYPED*	—	—	—	4	—	2	6	—	—	—	—
TOTAL	6	—	22	24	2	32	86	39	2	50	91

*See Table

TABLE VII - Continued

WILD ANIMALS AND BIRDS	FISH, REPTILES, AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	1973 TOTAL	1972 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
3 2 2	1			3		2	5	11	25 10 6 5 1	12 3 3 5 -	<i>agona</i> <i>alachua</i> <i>albany</i> <i>amsterdam</i> <i>aqua</i>
						1	1		1 13 1 1 1	11 18 3 1 -	<i>berta</i> <i>binza</i> <i>bornum</i> <i>brandenburg</i> <i>cairo</i>
1			1				1		4 1	54 2	<i>california</i> <i>carrau</i>
1 1				1			1		5 20 1	29 49 -	<i>cerro</i> <i>cholerae-suis</i> <i>concord</i>
	1								1 6 13	- 35 31	<i>degania</i> <i>drypool</i> <i>dublin</i>
	2							2	2 2	- -	<i>duesseldorf</i> <i>eastbourne</i>
1 4 2	2			1			1		15 2 4 7 1	67 1 - - 11 -	<i>eimsbuettel</i> <i>gaminara</i> <i>good</i> <i>habana</i> <i>halle</i>
	1 1	1				1	1		2 1 1	2 - 24	<i>hartford</i> <i>jangwani</i> <i>johannesburg</i>
	1					3	3		3 1 1	1 - 1	<i>kaapstad</i> <i>kandla</i> <i>kentucky</i>
1	1 1								847 1 - 8 1 1	- - 6 - -	<i>kenya</i> <i>lexington</i> <i>lille</i> <i>lohbruegge</i>
1				3			3		1 10 2 4 1	1 3 - 19 -	<i>lomita</i> <i>london</i> <i>luciana</i> <i>manila</i> <i>matopent</i>
									1 1 4 4	14 1 24 -	<i>melcagris</i> <i>minneapolis</i> <i>minnesota</i> <i>mission</i>
	3 1						2		1 3 4 10 1	1 2 1 - -	<i>muenster</i> <i>new-brunswick</i> <i>norwich</i> <i>ohio</i> <i>omifsan</i>
	1 1 1								1 3 2 2 5	1 - 8 5 2 18	<i>onderstepoort</i> <i>orion</i> <i>oslo</i> <i>pomona</i> <i>poona</i>
1 3	10			1			1		1 4 15 1	- 17 4 -	<i>pramisco</i> <i>pullorum</i> <i>rubislaw</i> <i>saphra</i>
12		5					5		28 1	46 -	<i>stegburg</i> <i>sundsvall</i>
	20					1	1		1 8 1 1	2 25 - 1	<i>thomasville</i> <i>uganda</i> <i>urbana</i> <i>usumbura</i>
	2 1					1	1		3 1 1	1 - -	<i>virchow</i> <i>westerstede</i> <i>zanzibar</i>
36	51	6	1	11	-	25	43	26	327	685	TOTAL
-	9	-	3	-	-	9	12	7	34	116	NOT TYPED*
36	60	6	4	11	-	34	55	33	361	801	TOTAL

**TABLE VIII SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY
FROM NONHUMAN SOURCES, 1973**

SOURCES	GROUP									TOTAL
	B	C1	C2	E	E1	G	O	Y	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	3		1	1					1	6
ANIMAL FEEDS										-
WILD ANIMALS AND BIRDS										-
FISH, REPTILES, AND ENVIRONMENT	2	1	2				2	1	1	9
HUMAN DIETARY ITEMS	3	5			2				2	12
MISCELLANEOUS	2	2				1			2	7
UNKNOWN										-
TOTAL	10	8	3	1	2	1	2	1	6	34

TABLE IX SALMONELLA ISOLATIONS FROM HUMAN SOURCES BY SEROTYPE AND YEAR, 1967-1973

SEROTYPE	1967	1969	1979	1970	1971	1972	1973	SEROTYPE	1967	1968	1969	1970	1971	1972	1973
<i>aba</i>			3		1		0	<i>cairo</i>						1	
<i>abaetetuba</i>			1				0	<i>california</i>	16	22	13	32	13	24	18
<i>aberddeen</i>		1	1	2		1	0	<i>cambridge</i>	1		1		1		
<i>abony</i>				1	2	1	1	<i>canada</i>							1
<i>abortus-bovis</i>	2			2	1		1	<i>canstel</i>			3	1			
<i>accra</i>		1						<i>canoga</i>				1		1	1
<i>adelaide</i>	4	1		5	1	3	1	<i>caracas</i>				2			
<i>agama</i>						1	1	<i>carno</i>			1				
<i>agona</i>	1	1		4	44	524	864	<i>carrau</i>	3	2	3	5	5	2	
<i>ahuza</i>		1						<i>cerro</i>	9	12	25	23	23	19	25
<i>akanji</i>				1				<i>chaille</i>					3		1
<i>alabama</i>	1	1						<i>chameleon</i>			1				
<i>alachua</i>	13	23	15	10	16	8	19	<i>charity</i>				1			
<i>albany</i>	5	18	16	31	18	44	47	<i>chester</i>	100	58	52	87	61	132	258
<i>albuquerque</i>			1					<i>chingola</i>					1		
<i>allendale</i>			1			1		<i>chittagong</i>					2	1	
<i>altona</i>				1				<i>cholerae-suis</i>	6	15	12	11	13	17	10
<i>amager</i>	2	1	29	5	4	2	3	<i>cholerae-suis v kunzendorf</i>	20	29	15	24	24	25	
<i>amersfoort</i>		1			1			<i>christiansborg</i>				1	1		1
<i>amounderness</i>						1		<i>clabornei</i>	1		1	1	1		
<i>amsterdam</i>				1	2	2	2	<i>clifton</i>				1	2	4	1
<i>anatum</i>	297	209	182	262	309	373	339	<i>coeln</i>			3	1	5		
<i>arechavaleta</i>		1	2	1	1	2	2	<i>coleypark</i>		2	1	1	1	4	2
<i>arkansas</i>			1					<i>colindale</i>					2		
<i>atlanta</i>	11	10	15	17	19	17	4	<i>colorado</i>	3		1	1	1	2	1
<i>austin</i>						1	2	<i>concord</i>	2	3		5	1		
<i>azteca</i>			1		2	1		<i>corvallis</i>					1		2
<i>babelsberg</i>				1				<i>cubana</i>	66	59	145	166	257	68	28
<i>bahrenfeld</i>						1		<i>daytona</i>		1	2			1	2
<i>ball</i>	1			1				<i>decatun</i>		1			1	2	
<i>bareilly</i>	81	95	74	72	51	79	13	<i>degania</i>			1	2			
<i>bedford</i>							1	<i>denver</i>	3				1	1	2
<i>belem</i>	2		3			1		<i>derby</i>	326	411	335	490	534	628	558
<i>benfica</i>				1		2	1	<i>drypool</i>	1	6	12	10	19	17	19
<i>berlin</i>	13	5	2		1	2	1	<i>dublin</i>	8	11	7	8	24	31	29
<i>bern</i>		1			1			<i>duesseldorf</i>	1	3	6	14	7	20	23
<i>berta</i>	37	30	40	70	101	48	24	<i>duisburg</i>	1					1	1
<i>bietri</i>								<i>durban</i>	2	2			2	1	3
<i>binza</i>	14	6	9	9	11	11	5	<i>durham</i>	8						
<i>birkenhead</i>					1	1	1	<i>eastbourne</i>	1	1	5	7	9	4	9
<i>bispebjerg</i>						1		<i>edinburg</i>				1	2	1	
<i>blegdam</i>		1						<i>eimsbuettel</i>	26	5	33	21	19	28	23
<i>blockley</i>	519	487	505	660	586	452	317	<i>elisabethville</i>						2	
<i>bonaire</i>			1		1			<i>elmorane</i>			1				
<i>bonariensis</i>			1	1	3	1		<i>emek</i>	1						1
<i>bonn</i>				1				<i>emmastad</i>							1
<i>bornum</i>						4		<i>enteritidis</i>	1,277	1,740	1,988	2,504	2,249	1,690	1,461
<i>bouso</i>						2		<i>eppendorf</i>	1						
<i>bovis-morbificans</i>	6	2	10	33	26	29	19	<i>essen</i>	4	2	1				1
<i>bradford</i>	1	2	2	3	1	1		<i>fayed</i>	1	1	1	1			
<i>braenderup</i>	83	139	78	92	126	132	108	<i>flint</i>				3			
<i>brancaster</i>	1		2					<i>florida</i>	2	1	2	1	4	2	1
<i>brandenburg</i>	2	5	4	5	8	10	5	<i>fresno</i>		2					
<i>bredeney</i>	120	172	130	196	191	208	159	<i>friedenau</i>							1
<i>bristol</i>				1	3		2	<i>frintrop</i>							1
<i>brunei</i>			1		1										
<i>bukavu</i>			2			1									
<i>businga</i>			1												

TABLE IX - Continued

SEROTYPE	1967	1968	1969	1970	1971	1972	1973	SEROTYPE	1967	1968	1969	1970	1971	1972	1973
<i>galiema</i>								<i>lanka</i>		2	1				2
<i>gallinarum</i>	1	1	3	3	4	2	3	<i>lansing</i>				1			
<i>gaminara</i>	7	16	14	17	21	35	36	<i>larochelle</i>					1	2	2
<i>garoli</i>	1		2					<i>lawndale</i>		1	1				
<i>gatow</i>	1	3	2	1	11		3	<i>lexington</i>	3		2	5	8	10	4
<i>gatuni</i>	1	1	2	1				<i>lille</i>					1		6
<i>gdansk</i>							1	<i>lindenburg</i>	2	2	2	3	1	2	1
<i>georgia</i>	3	1	3	1	2	1		<i>litchfield</i>	81	93	124	182	161	173	168
<i>give</i>	61	65	74	83	86	95	81	<i>livingstone</i>	55	44	35	30	59	53	26
<i>glostrup</i>	1	1		1	1	1	1	<i>llandoff</i>		1					
<i>goeteborg</i>							2	<i>loma-linda</i>	6	5	1	4	3	3	9
<i>goettingen</i>		1		2			1	<i>lomita</i>	4	6	15	20	13	5	3
<i>good</i>							2	<i>london</i>	3	1	16	26	64	88	177
<i>grumpensis</i>	1	2	3		5	4	2	<i>los angeles</i>			1				
								<i>lowlace</i>				1			
<i>haarlem</i>	1							<i>luciana</i>	2	2		2	1	2	4
<i>habana</i>	15	7	15	6	17	19	23								
<i>hadar</i>		1						<i>madelia</i>	8	6	11	1	4	9	7
<i>hagenbeck</i>		1						<i>manchester</i>	2	4	2	6	2	2	2
<i>haiifa</i>				1	3	4	2	<i>manhattan</i>	284	200	253	340	420	324	186
<i>halmstad</i>	1					2		<i>manila</i>		2					2
<i>hamburg</i>				1	1	1	1	<i>maracaibo</i>			2	1			
<i>harmelen</i>						1		<i>marina</i>							1
<i>hartford</i>	22	16	41	24	38	30	42	<i>maricopa</i>							1
<i>hato</i>			2					<i>matadi</i>					2	3	
<i>heidelberg</i>	1,648	1,326	1,428	1,699	1,660	1,465	1,622	<i>mekeagridis</i>	7	4	14	26	26	20	18
<i>heilbron</i>	3	1	2		1	6		<i>memphis</i>	1						1
<i>hidalgo</i>							1	<i>menston</i>							2
<i>holcomb</i>				1				<i>miami</i>	69	118	106	71	94	88	61
<i>homosassa</i>						1		<i>michigan</i>			2				
<i>horsham</i>					1			<i>mikawashima</i>				1	3	3	2
<i>houten</i>					1			<i>minneapolis</i>	22	19	27	34	30	45	23
<i>hvittingfoss</i>		1			1	2	6	<i>minnesota</i>							
<i>ibadan</i>	2	1	5	8	12	8	10	<i>mislimar-hacmek</i>							1
<i>illinois</i>	1							<i>mission</i>	19	1	3	1	4	3	3
<i>indiana</i>	49	84	93	109	107	154	74	<i>mississippi</i>	58	50	45	66	65	107	130
<i>infantis</i>	980	945	1,096	1,214	1,421	1,657	1,376	<i>missouri</i>	1	1				3	
<i>inverness</i>	4	2	6	6	10	7	15	<i>mjimwema</i>							
<i>irenea</i>	1							<i>moheni</i>							1
<i>irumu</i>	12	2	5	10	3	2	2	<i>molade</i>				7	7	3	5
<i>isangi</i>						2	1	<i>montevideo</i>	398	271	314	394	375	363	464
<i>israel</i>	1							<i>muenchen</i>	217	211	242	276	389	426	430
<i>ituri</i>					1	1	1	<i>muenster</i>	25	32	40	25	26	30	25
<i>jamaica</i>				1				<i>mundonobo</i>			1				
<i>jangwani</i>			1			1		<i>nachshonim</i>		1					
<i>java</i>	309	199	173	459	584	464	325	<i>nagoya</i>	1						
<i>javana</i>	373	518	465	420	516	563	549	<i>napoli</i>			1				
<i>johannesburg</i>	15	9	9	7	5	19	16	<i>narashino</i>	1						
<i>kaapstad</i>	1	4		3	11	17	11	<i>nashua</i>			1				
<i>kentucky</i>	40	17	30	55	34	36	35	<i>nchanga</i>		7			1		
<i>kibusi</i>						1		<i>necs-ziona</i>							1
<i>kingston</i>						1		<i>neuminsten</i>			1	1			
<i>kintambo</i>		1						<i>new-brunswick</i>	1	5	10	5	6	35	7
<i>kottbus</i>	3	5	14	53	67	185	65	<i>new-haw</i>	2						
<i>krefeld</i>					3	3		<i>newington</i>	43	44	32	48	41	43	24
<i>kumasi</i>				1				<i>newlands</i>					3		
<i>kunduchi</i>	2							<i>new mexico</i>							1
<i>kuru</i>							1	<i>newport</i>	1,263	1,248	1,611	1,700	1,722	2,201	2,058
								<i>nienstedten</i>					1	1	3

TABLE IX - Continued

SEROTYPE	1967	1968	1969	1970	1971	1972	1973	SEROTYPE	1967	1968	1969	1970	1971	1972	1973
<i>nigeria</i>	1				1			<i>suberu</i>				1			
<i>norwich</i>	13	41	24	22	31	37	34	<i>sundsvall</i>	1			1	2	4	2
<i>nottingham</i>	1			3											
<i>ohio</i>	5	1	16	8	15	16	15	<i>takoradi</i>	2						1
<i>onderstepoort</i>		1			2	1		<i>taksony</i>	1	1		4	4	3	5
<i>oranienburg</i>	406	295	266	399	412	621	399	<i>tallahassee</i>	6	8	12	8	5	17	1
<i>ordonez</i>				12	2	1	1	<i>tananarive</i>							1
<i>orion</i>	6	6	4	6	2	3		<i>tel-el-kebir</i>			1			1	1
<i>oritamerin</i>	1	1	1	1	3			<i>tennessee</i>	63	85	43	54	76	52	57
<i>os</i>								<i>texas</i>				1	1	1	1
<i>oslo</i>	19	14	19	27	43	23	60	<i>thomasville</i>	3	1	4	7	3	16	2
<i>panama</i>	182	230	331	236	286	229	342	<i>thompson</i>	508	673	1,056	958	834	675	533
<i>papua</i>				1	1			<i>tosamanga</i>					1		
<i>paratyphi A</i>	7	13	14	5	14	10	20	<i>tournai</i>						1	
<i>paratyphi B</i>	173	114	166	205	241	208	160	<i>tucson</i>					1	1	
<i>paratyphi B v odense</i>		4	3					<i>tuebingen</i>						1	1
<i>paratyphi C</i>	1	2		2		1		<i>typhi</i>	690	609	549	533	583	535	680
<i>pensacola</i>	5	13	3	9	9	9	12	<i>typhi-murium</i>	5,530	5,147	5,514	5,640	6,525	6,460	8,348
<i>pharr</i>	1	1						<i>typhi-murium v copenhagen</i>	273	316	259	277	353	278	259
<i>phoenix</i>			1			4	1	<i>uganda</i>	1	1	1	4	4	13	13
<i>pomona</i>	1	3	6	3	3	4	6	<i>umhlatazana</i>						1	
<i>poona</i>	58	75	81	93	97	95	141	<i>upsala</i>					1		
<i>portland</i>							1	<i>urhana</i>	18	29	49	59	53	29	14
<i>portsmouth</i>		1						<i>usumbora</i>							3
<i>potsdam</i>		1	1	4		9	3	<i>uzaramo</i>				1			
<i>praha</i>				2				<i>vejle</i>	2					2	1
<i>pullorum</i>	3	1	1	5				<i>victoria</i>		2				1	1
<i>putten</i>							4	<i>virchow</i>	4	6	7	4	21	29	47
<i>ramat-gan</i>				1				<i>wagenia</i>	1						
<i>reading</i>	54	74	68	147	172	96	112	<i>wandsworth</i>		1			1		1
<i>redlands</i>						1		<i>wangata</i>						1	1
<i>remo</i>						2		<i>wassenaar</i>		1	2		1	2	1
<i>richmond</i>	1		2	3	1	1	3	<i>welikada</i>			3				
<i>riogrande</i>						2		<i>weltvreeden</i>	61	78	54	104	151	112	118
<i>rubislaw</i>	24	33	30	27	29	31	58	<i>weslaco</i>			1	1	1	2	1
<i>rutgers</i>				2	1			<i>westerstede</i>	1			3		2	1
<i>saint-paul</i>								<i>westhampton</i>		3	2	2	7	6	1
<i>salford</i>	907	1,143	986	1,157	919	1,013	737	<i>willemstad</i>		2	2		3		
<i>salinatis</i>							1	<i>worcester</i>	1						
<i>san-diego</i>	149	106	118	234	147	308	122	<i>worthington</i>	24	22	35	59	46	46	55
<i>san-juan</i>			2	2				<i>zanzibar</i>		1					
<i>saphra</i>	11	20	14	15	14	11	12	<i>SR</i>							
<i>sarajane</i>							2	<i>SR.a</i>							
<i>schoeneberg</i>		1						<i>SR.a-z</i>							
<i>schwarzengrund</i>	72	55	89	56	85	58	71	<i>SR.a-z</i>			1				
<i>seefeld</i>					1			<i>SR.a-z</i>					1		
<i>senftenberg</i>	58	65	78	86	219	219	72	<i>SR.a-z</i>					1		
<i>sendai</i>			2				6	<i>SR.a-z</i>							
<i>seremban</i>								<i>Group A</i>	1		3	1	5	1	3
<i>shiple</i>			1	1		1		<i>Group B</i>	493	401	340	397	359	438	626
<i>shubra</i>				1				<i>Group C</i>	2	13	10	17	31	36	21
<i>siegburg</i>	10	8	25	55	69	55	51	<i>Group C₁</i>	138	58	99	111	86	95	102
<i>simsbury</i>	4	6	19	9	8	6	11	<i>Group C₂</i>	132	72	128	132	106	110	100
<i>singapore</i>			1		1		4	<i>Group D</i>	77	70	98	111	75	61	76
<i>sinstorf</i>						2	3	<i>Group E</i>	36	9	16	20	37	20	24
<i>soahanina</i>								<i>Group E₁</i>			1		1	3	1
<i>solna</i>					1			<i>Group E₂</i>					2	1	
<i>springs</i>								<i>Group E₄</i>		4			3	2	
<i>stanley</i>	7	7	13	13	17	10	18								
<i>stanleyville</i>				1											
<i>stockholm</i>			5												

TABLE IX - Continued

SEROTYPE	1967	1968	1969	1970	1971	1972	1973
Group F	1	2		4	7	2	2
Group G	7	8	17	20	22	11	10
Group H	9	3	4	2		1	4
Group I	1		1	2	3	1	2
Group K	1						
Group L					1		
Group M	1						
Group O	3	3	3	1	1	1	1
Group P					1		
Group R					2		
Group W							1
Group V			1				
Unknown	205	558	498	438	450	409	181
TOTAL	19,723	19,740	21,413	24,216	25,694	26,110	26,693

**STATE EPIDEMIOLOGISTS AND
STATE LABORATORY DIRECTORS**

The State Epidemiologists are the key to all disease surveillance activities. They are responsible for collecting, interpreting, and transmitting data and epidemiologic information from their individual States. Their contributions to this report are gratefully acknowledged. In addition, valuable contributions are made by State Laboratory Directors; we are indebted to them for their valuable support.

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