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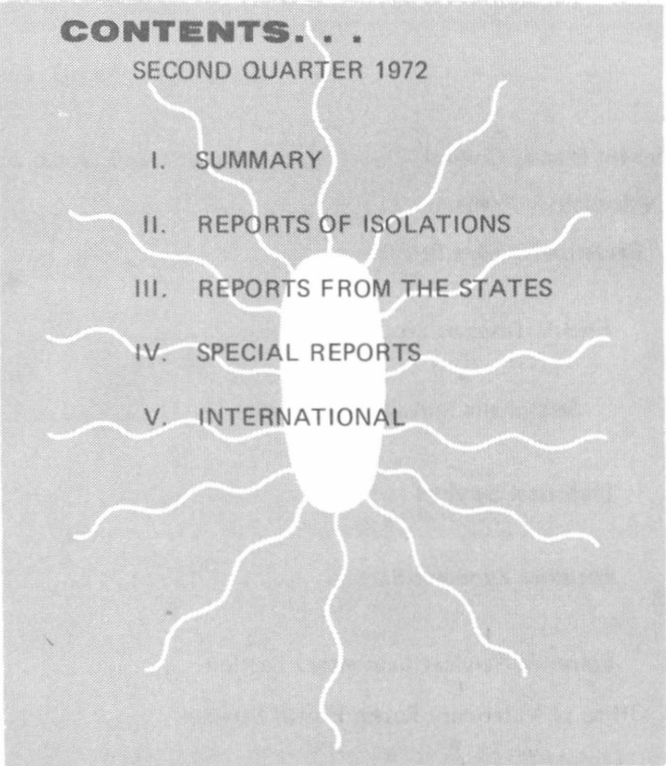
CENTER FOR DISEASE CONTROL

# SALMONELLA

**SURVEILLANCE**

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SECOND QUARTER 1972

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**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE**  
**Health Services and Mental Health Administration**

# PREFACE

Summarized in this report is information received from State and City Health Departments, university and hospital laboratories, the National Animal Disease Laboratory (USDA, ARS), Ames, Iowa, 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:

Center for Disease Control  
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## SUGGESTED CITATION

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\*Through June 1972

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#### NOTE

The data contained in the tables and summarized in sections I and II deal only with isolates reported to CDC by state, and other reference laboratories. Extrapolation from these data to aspects of the total incidence of salmonellosis in the United States should be made only with caution, and references to the data should be appropriately qualified.

## I. SUMMARY

In the 2nd quarter of 1972, 5,847 isolations of salmonella were reported from humans, an average of 450 isolations per week (Tables I, II, and V-A). This number represents an increase of 59 (15.1%) over the weekly average for the 1st quarter of 1972 and an increase of 51 (12.8%) over the weekly average for the 2nd quarter of 1971. The average number of human isolations reported per week for each month and for the quarter are provided below for the last 3 years:

	<u>1970</u>	<u>1971</u>	<u>1972</u>
April	346	375	382
May	381	459	487
June	<u>459</u>	<u>368</u>	<u>472</u>
2nd Quarter	395	399	450

Reports of 596 nonhuman isolates of salmonella were received during the 2nd quarter of 1972 (Tables III, IV, and V-B).

## II. REPORTS OF ISOLATIONS

The most frequently reported serotypes during the 2nd quarter:

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank Last Quarter	Serotype	Number	Percent
<u>typhimurium*</u>	1707	29.2	1	<u>typhimurium*</u>	61	10.2
<u>enteritidis</u>	465	8.0	5	<u>derby</u>	33	5.5
<u>newport</u>	418	7.1	4	<u>saint-paul</u>	27	4.5
<u>infantis</u>	289	4.9	2	<u>tennessee</u>	27	4.5
<u>heidelberg</u>	288	4.9	3	<u>california</u>	24	4.0
<u>oranienburg</u>	251	4.3	15	<u>eimsbuettel</u>	23	3.9
<u>saint-paul</u>	190	3.2	6	<u>newport</u>	23	3.9
<u>thompson</u>	149	2.5	8	<u>oranienburg</u>	21	3.5
<u>java</u>	147	2.5	13	<u>cubana</u>	20	3.4
<u>derby</u>	134	2.3	7	<u>montevideo</u>	18	3.0
				<u>senftenberg</u>	18	3.0
Total	4038	69.1		Total	295	49.5
TOTAL				TOTAL		
(all serotypes)	5847	100.0		(all serotypes)	596	100.0
*Includes var.				*Includes var.		
<u>copenhagen</u>	56	1.0		<u>copenhagen</u>	11	1.8

### III. REPORTS FROM THE STATES

#### A. Reports of Salmonella Outbreaks Received During the 2nd Quarter, 1972

This table lists investigated outbreaks of salmonellosis reported to CDC from various sources. Definitions of cases and of numbers at risk 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.

State	Month of Outbreak	Location	Serotype	Ill	At Risk	Number		Deaths	Mode of Transmission	Comment
						With Positive Cultures	Hospitalized			
California	February	Seaside	<u>S. paratyphi B</u>	4	287	8	4	0	unidentified food	School cafeteria outbreak. Positive cultures from 4 kitchen workers.
Rhode Island	"	Providence	<u>S. paratyphi B</u>	6	?	8	0	0	not identified	Home for babies awaiting adoption.
Kansas	March	Wichita	<u>S. newport</u>	47	>100	55	10	0	salmon	Served at a funeral and a wedding.
Arkansas	April	Lonoke	<u>S. new-brunswick</u>	12	33	12	-	0	unknown	Nursing home outbreak--owner, index case, worked in kitchen.
"	"	Paragould	<u>S. agona</u>	4	?	21	4	0	cole slaw	Cross-contamination from raw chicken at drive-in restaurant.
Hawaii	"	Maui	<u>S. oranienburg</u>	58	>100	58	?	0	beef	Iluau outbreak.
Illinois	"	Cook County	<u>S. bareilly</u>	10	?	10	10	0	not identified	
Maryland	"	Montgomery County	<u>S. typhimurium</u>	9	25	6	9	0	not identified	Nursing home outbreak.
West Virginia	"	Raleigh County	<u>S. enteritidis</u>	40-50	?	15	?	0	pet ducklings	Sold as Easter presents.
Michigan, Minnesota, Wisconsin	April-May	widespread	<u>S. typhimurium</u>	~250	?	~250	~170	1	beef	Tartrate-negative strain.
New Jersey	May	Belleville	<u>S. typhimurium</u>	>150	~1200	32	3	0	bakery cakes	Provided to 2 parties--2 asymptomatic carriers in bakery.

#### B. Increased Reporting of Salmonella agona Isolations. Reported by G. Doty Murphy III, MD, State Epidemiologist, Arkansas State Board of Health, and Grace W. McConnell VMD, Bacterial Zoonoses Section, CDC, Atlanta.

Salmonella Surveillance, July-September 1971 (issued February 1972) reported a sudden increase in Salmonella agona isolations in the United States in 1971. Only 6 human isolations had previously been recorded in this country, but between May and November 1971, 30 additional isolates were reported. These came from 10 states, but most were from Pennsylvania, Illinois, or California. The age and sex distribution of those from whom S. agona was isolated did not differ significantly from that of all people from whom salmonella isolates were reported. No common source for the cases was identified.

The number of reported human cases of S. agona infection has continued to increase, and preliminary data from the 4th quarter, 1972, show that it ranks 8th among the most commonly reported serotypes. Although this serotype has been isolated in 27 states, the majority of isolates have come from Pennsylvania, Arkansas, Wisconsin, Maryland, and Illinois.

One of the first nonhuman isolates of S. agona was from Peruvian fishmeal in 1970. Eighty-three percent of all nonhuman isolations of S. agona have been from poultry or poultry by-products, and the geographic distribution of nonhuman and human isolates in this country corresponds to that of the poultry industry.

In an outbreak involving patrons of an Arkansas drive-in restaurant, the source of infection was traced to poultry from a large Mississippi operation. Peruvian fishmeal composed 8% of the feed for the broiler flocks there.

Similar epidemiologic features of S. agona have been observed in several other countries. The first isolations of S. agona in Israel and the Netherlands were from Peruvian fishmeal in 1969. It was recovered from poultry and other food animals soon thereafter, and human cases of S. agona infection were subsequently documented

in these countries. The first isolation of S. agona in England was from imported fishmeal in 1970, and this serotype was soon commonly recovered from food animals and meat products. Human cases were reported in England with increasing frequency in 1971, and at the present time S. agona is the second most common human isolate there. Austria, Finland, Hungary, Italy, Luxembourg, and Yugoslavia all reported isolations of S. agona for the first time in 1970; the source of those isolates is not known.

These data suggest that Peruvian fishmeal may have been the original vehicle for the worldwide dissemination of S. agona noted since 1969. The frequent use of fishmeal in poultry and domestic animal feeds has apparently led to wide distribution of this serotype among food animals, with the resultant appearance of S. agona infection in humans.

#### IV. SPECIAL REPORTS

##### A. Salmonellosis and Turtles, Restrictions on Importation and Interstate Commerce.

On November 18, 1972, the Federal Register (37FR24670) contained a notification published by the Administrator, Health Services and Mental Health Administration, with the approval of the Acting Secretary, Department of Health, Education, and Welfare, and of the Commissioner, Food and Drug Administration, entitled "Prohibition on Importation of Turtles, Tortoises, and Terrapins; Bacteriological Testing and Certification for Interstate Shipment." This notice advised of amendments to Parts 71 and 72 of Title 42, Code of Federal Regulations, to take effect December 18, 1972. These amendments prohibit, with certain exceptions, the importation of turtle eggs or live turtles into the United States and provide for criminal penalties for infringement of these restrictions. The amendments also restrict, with certain exceptions, interstate shipment of turtle eggs or live turtles to those that have been certified free of bacteria of the genera Salmonella and Arizona after bacteriologic testing by specified methods. Criminal penalties are provided for illegal interstate shipment or other violations of the statute, with responsibility for enforcement assigned to the Food and Drug Administration.

##### B. Recent Articles on Salmonellosis

1. Anderson ES: Salmonellosis in livestock. *Lancet* 2:138, 1972
2. Barrett GS, MacDermott J: Breast abscess: A rare presentation of typhoid. *Br Med J* 2:628, 1972
3. Bender TR, Jones TS, DeWitt WE, et al: Salmonellosis associated with whale meat in an Eskimo community. Serologic and bacteriologic methods as adjuncts to an epidemiologic investigation. *Am J Epidem* 96:153, 1972
4. Editorial: Salmonella typhi resistant to chloramphenicol. *Br Med J* 3:306, 1972.
5. Editorial: Typhoid fever. *Lancet* 2:416, 1972
6. George JTA, Wallace JG, Morrison HR, et al: Paratyphoid in man and cattle. *Br Med J* 3:208, 1972
7. Gould KL, Gooch JM, Ching GQL: Epidemiologic aspects of salmonellosis in Hawaii. *Am J Public Health* 62:1216, 1972.
8. Stein H, Beck J, Solomon A, et al: Gastroenteritis with necrotizing enterocolitis in premature babies. *Br Med J* 2:616, 1972
9. Werner SB, Morrison FR: Salmonellosis in man. *Lancet* 2:1143, 1972
10. World Health Organization Scientific Group on Oral Enteric Bacterial Vaccines, "Oral Enteric Bacterial Vaccines." World Health Organization Technical Rep Ser No 500, 1972

##### C. Salmonella Surveillance, January-March 1972--Errata

1. Table III: Change "1970 TOTAL" to "TOTAL" and "1969 TOTAL" to "CUMULATIVE TOTAL."
2. Table IV: Change "1971 TOTAL" to "TOTAL" and "1970 TOTAL" to "CUMULATIVE TOTAL."

## V. INTERNATIONAL

A. Chloramphenicol-Resistant Salmonella typhi--Importation from Mexico. Reported by Philip M. Hotchkiss, DVM, State Epidemiologist, Arizona State Department of Health; Michael B. MacQuarrie, MD, EIS Officer, S. Benson Werner, MD, Medical Epidemiologist, and James Chin, MD, State Epidemiologist, California State Department of Health; Richard A. Wright, MD, EIS Officer and Thomas M. Vernon, MD, State Epidemiologist, Colorado State Department of Public Health; John E. McCroan, PhD, State Epidemiologist, Georgia Department of Human Resources; Charles T. Caraway, DVM, State Epidemiologist, Louisiana State Department of Health; Reita Faria, MD, Epidemiologist, and Nicholas J. Fiumara, MD, State Epidemiologist, Massachusetts Department of Public Health.

Early in 1972 attention was first directed to an increasing incidence of typhoid fever in Mexico City and its environs.<sup>1</sup> The epidemic was notable for the severity of clinical illness and for in vitro and clinical resistance of the causative organism to chloramphenicol. The antibiotic resistance was shown to be mediated by an episomal resistance transfer factor.<sup>2</sup> This episome, which is similar but not identical to the episome of the Central American epidemic strain of S. dysenteriae 1,<sup>3</sup> confers resistance to chloramphenicol, tetracycline, streptomycin, and sulfonamides. This episome has also been hypothesized to be associated with the unusual severity and ease of transmission of the illness seen with these epidemic strains.<sup>2</sup>

There has been concern about importation of chloramphenicol-resistant typhoid fever from Mexico into this country. Typhoid fever is not common in the United States. A case may not be promptly diagnosed unless there is a high index of suspicion generated by a careful travel history from the patient. The presence of epidemic disease in Mexico due to an antibiotic-resistant organism raises the further possibility that an imported case, once diagnosed, may be ineffectually treated with chloramphenicol, which is ordinarily the drug of choice in typhoid fever.

The epidemic strain can be recognized by its characteristic degraded Vi phage type in addition to its antibiotic sensitivity pattern. Twenty-eight cases of typhoid fever due to this strain that occurred in the United States were reported to CDC in 1972. Nineteen of these were reported from California, and 3 occurred in Arizona. Most cases in which travel histories were known had been in Mexico before the onset of illness, but in at least 2 cases transmission apparently occurred north of the border. At least 1 of the 28 cases proved fatal.

Episomal mediation of chloramphenicol resistance in S. typhi is not limited to strains from Mexico.<sup>4</sup> Chloramphenicol-resistant strains have previously been identified but not as causes of epidemic disease.<sup>5</sup> At present the treatment of choice for chloramphenicol-resistant typhoid fever is ampicillin, assuming ampicillin resistance is not independently present in the same organism. An alternative mode of therapy is the combination of trimethoprim and sulfamethoxazole.<sup>5</sup>

### B. Most Prevalent Serotypes in 6 Foreign Countries

Public health laboratories in several countries exchange information with the Salmonella Surveillance Program, CDC. The most frequently reported serotypes isolated from human sources in 6 of these countries are summarized in the following table:

- 
1. Vázquez V, Calderón E, Rodríguez RS: Chloramphenicol-resistant strains of Salmonella typhosa. *New Engl J Med* 286:1220, 1972
  2. Gangarosa EJ, Bennett JV, Wyatt C, et al: An epidemic-associated episome? *J Infect Dis* 126:215, 1972
  3. Paniker CKJ, Vimala KN: Transferable chloramphenicol resistance in Salmonella typhi. *Nature* 239:109, 1972
  4. Anderson ES, Smith HR: Chloramphenicol resistance in the typhoid bacillus. *Br Med J* 3:329, 1972
  5. Scragg JN, Rubidge CJ: Trimethoprim and sulphamethoxazole in typhoid fever in children. *Br Med J* 3:738, 1971



Most Frequently Reported Serotypes from Human Isolations--6 Foreign Countries

<u>Australia</u> <sup>1,2</sup>			<u>Belgium</u> <sup>3</sup>			<u>Canada</u> <sup>4</sup>		
1972			2nd Quarter 1972			January-May and July-September 1972		
Serotype	Number	Percent	Serotype	Number	Percent	Serotype	Number	Percent
<u>typhimurium</u>	834	36.8	<u>typhimurium</u>	657	64.7	<u>typhimurium</u>	926	28.9
<u>bovis-morbificans</u>	197	8.7	<u>enteritidis</u>	79	7.8	<u>newport</u>	411	12.8
<u>muenchen</u>	144	6.4	<u>panama</u>	77	7.7	<u>saint-paul</u>	318	9.9
<u>chester</u>	114	5.0	<u>infantis</u>	32	3.2	<u>enteritidis</u>	219	6.8
<u>derby</u>	83	3.7	<u>brandenburg</u>	27	2.7	<u>infantis</u>	195	6.1
<u>havana</u>	72	3.2	<u>dublin</u>	22	2.2	<u>montevideo</u>	174	5.4
<u>anatum</u>	70	3.1	<u>give</u>	19	1.9	<u>thompson</u>	143	4.5
<u>adelaide</u>	64	2.8	<u>menston</u>	16	1.6	<u>typhi</u>	120	3.7
<u>oranienburg</u>	52	2.3	<u>anatum</u>	9	0.9	<u>schwarzengrund</u>	90	2.8
<u>wandsworth</u>	46	2.0	<u>bredeley</u>	9	0.9	<u>blockley</u>	87	2.7
Total	1676	74.0	Total	947	93.3	Total	2683	83.8
TOTAL			TOTAL			TOTAL		
(all serotypes)	2266	100.0	(all serotypes)	1015	100.0	(all serotypes)	3203	100.0

<u>France</u> <sup>5</sup>			<u>Israel</u> <sup>6</sup>			<u>Switzerland</u> <sup>7</sup>		
1st-3rd Quarters 1972			1st Quarter 1972			1st Quarter 1972		
Serotype	Number	Percent	Serotype	Number	Percent	Serotype	Number	Percent
<u>wien</u>	1019	34.7	<u>typhimurium</u>	75	20.7	<u>typhimurium</u>	29	21.3
<u>typhimurium</u>	662	22.5	<u>irumu</u>	63	17.4	<u>panama</u>	26	19.1
<u>panama</u>	269	9.1	<u>lille</u>	44	12.2	<u>typhi</u>	19	14.0
<u>java</u>	122	4.1	<u>infantis</u>	27	7.5	<u>enteritidis</u>	11	8.1
<u>newport</u>	94	3.2	<u>enteritidis</u>	22	6.1	<u>paratyphi B</u>	11	8.1
<u>enteritidis</u>	85	2.9	<u>typhimurium</u> var.			<u>newport</u>	6	4.4
<u>brandenburg</u>	78	2.7	<u>copenhagen</u>	21	5.8	<u>typhimurium</u> var.		
<u>paratyphi B</u>	66	2.2	<u>blockley</u>	20	5.5	<u>copenhagen</u>	5	3.7
<u>saint-paul</u>	55	1.9	<u>haifa</u>	17	4.7	<u>infantis</u>	3	2.2
<u>typhi</u>	44	1.5	<u>sofia</u>	8	2.2	<u>irumu</u>	3	2.2
			<u>amager</u>	7	1.9	<u>johannesburg</u>	3	2.2
			<u>eurek</u>	7	1.9			
			<u>tennessee</u>	7	1.9			
Total	2494	84.8	Total	318	87.8	Total	116	85.3
TOTAL			TOTAL			TOTAL		
(all serotypes)	2940	100.0	(all serotypes)	362	100.0	(all serotypes)	136	100.0

1. Salmonella Reference Laboratory, The Institute of Medical and Veterinary Science: Salmonella Reference Laboratory, 1972 Annual Report. Adelaide, 1972.
2. Salmonella Diagnostic and Reference Laboratory, State Health Laboratory Service: Isolations of Salmonella, Arizona, Edwardsiella, Shigella, and Enteropathogenic E. coli, 1971. Perth, 1972
3. Ghysels G: Relevé des 1015 Souches de Salmonella, d'Origine Humaine, Identifiées au Cours du Deuxieme Trimestre de 1972. Centre National Belge des Salmonella et des Shigella, Institut d'Hygiene et d'Epidemiologie, Ministere de la Sante Publique et de la Famille. Brussels, 1972
4. National Enteric Reference Center, CCDC, Health Protection Branch, Department of National Health and Welfare. Salmonellae, Shigellae and Enteropathogenic E. coli Identified in Canada. Ottawa, January-May and July-September 1972
5. Institut Pasteur: Sérotypes de Salmonella Isolées en Europe et Identifiées au Centre des Salmonella de l'Institut Pasteur de Paris. Paris, 1972
6. Government Central Laboratories, Ministry of Health: Salmonella Serotypes Identified in Israel, January-March 1972: Number and Source of Isolations. Jerusalem, 1972
7. Schweiz. Salmonellazentrale Universität Bern, Vet-Bakteriologisches Institut: Salmonellastämme. Bern, 1972

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, SECOND QUARTER, 1972

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>					1			1	2	4	3	4	1	2	4	3						2		1						1	1	1	6
<i>bareilly</i>				1		1		1					1	13									2		2								
<i>blockley</i>	1				1	4		8	16	13	4	4	1	15	2			2	7			3		4					3	1		3	
<i>braenderup</i>			3	5		4			5	3	6	2		1	1			1	1													1	5
<i>bredeney</i>				3					1	4			1	6	3	8	1	1	1					3								1	4
<i>chester</i>									1					3			1							1									
<i>cholerae-suis v kun</i>														1										1									
<i>cubana</i>				4								3			1												1				2		2
<i>derby</i>				3		1		5	14	6	6	7	1	6	2	5						1	3	7		3	1	1	1	9	21		
<i>enteritidis</i>	1			29	3	5		14	37	22	33	19	4	36	40	24	3	10	4	1	1		6	2	17		17	19	32	2	8	10	
<i>give</i>								1		3				1	1				1												1	2	
<i>heidelberg</i>	1		1	3		5		4	10	14	8	5	3	35	18			7	4			10		23		6			7	2	13	21	
<i>indiana</i>						1		1	1	1	3			1	4	1							5						1		6	2	
<i>infantis</i>	2		3	10	2	9		2	29	12	12	10	6	19	8	4	2	3	8		1	15	2	14	1	18	3	10		7	21		
<i>java</i>				7	3	7		3	3	38	9			7	3	7	12	3	2	2		1		1								10	
<i>javiana</i>	2			2						1				2	3	1		1	1		1				1					1	3	29	
<i>litchfield</i>	1			2		1		4	4	4			4		3									1							2	6	
<i>livingstone</i>				1										1		2							1								1	6	
<i>manhattan</i>				1		1		4	11		9	3	1	9	3	3							1							2	6	6	
<i>miami</i>																							7		2				2		6	13	
<i>mississippi</i>														1																		8	2
<i>montevideo</i>	3		2	3		2		2	4	2	4	4	2	1	4	1		1					5		3				1	1	8		
<i>muenchen</i>	1			2		2		3		3	7			7	5	6			1			4	2	7		4		3		5	16		
<i>newington</i>			1					2	1		1								2						1								
<i>newport</i>	1		1	3		1		26	24	9	10	5	2	27	20	26	22	5	24		1	47		5	1	6	1	1		9	34		
<i>oranienburg</i>				8				6	7	4	2	11		3	6	7	4		4	2		2				2	7	1		13	12		
<i>panama</i>				1					2	2	1			1		1	1	1						1									
<i>paratyphi B</i>			4	4								8	1		9									3			1	1					
<i>reading</i>			2			1			1		1			1		1		1															
<i>saint-paul</i>		1	16	1	12			1	18	14	10	7	2	5	7	8	2	2			1	3		10		4		10	4	5	10		
<i>san-diego</i>				1				3			1			1				1						3									
<i>schwarzengrund</i>								1	1	1						1				1													
<i>senftenberg</i>				4						2	1			1	1	1	1					1		2		2				1	6		
<i>tennessee</i>						1		1		2					2																	1	6
<i>thompson</i>	1	1		11	1	3		7	9	5	1	3	2	11	7	6	6					1		2	1	6				2	12		
<i>typhi</i>						2	7	2	7		2	4		6	5	1			1					3	2	1	2	2	2	2	2	5	
<i>typhimurium</i>	3		1	31	4	51		48	-67	94	58	40	28	165	111	124	196	19	25	3	10	32	5	47	1	38	4	32	2	42	54		
<i>typhimurium v cop</i>	1			14		5				9					3			2					1										
<i>weltevreden</i>																																	
<i>worthington</i>										1	1														1				3		2		
TOTAL	18	1	12	172	20	119	7	149	275	273	193	146	56	387	276	244	259	59	87	11	15	-	129	18	171	9	118	39	113	15	151	320	
ALL OTHER*	1	7	-	13	12	6	105	11	13	8	47	1	6	37	25	10	6	2	10	-	-	4	1	2	19	43	3	2	13	4	18	26	
TOTAL	19	8	12	185	32	125	112	160	288	281	240	147	62	424	301	254	265	61	97	11	15	4	130	20	190	52	121	41	126	19	169	346	

Note: NYA - New York, Albany; NYB - Beth Israel Hospital; NYC - New York City.  
Beth Israel Hospital is a reference laboratory and this quarter serotyped a total of 268 cultures.

\*See Table II.

TABLE I - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE 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						
	1				3	1	7				1		1	1		1				1	53	0.9	112	1.0	<i>anatum</i>	
3		5			6		2			1	1										24	0.4	30	0.3	<i>bareilly</i>	
1							2				1					2					112	1.9	221	2.0	<i>blockley</i>	
					1		5												1		41	0.7	70	0.6	<i>braenderup</i>	
													2			1					49	0.8	95	0.9	<i>bredenev</i>	
	1																1				9	0.2	20	0.2	<i>chester</i>	
																					5	0.1	10	0.1	<i>cholerae-suis v kun</i>	
3	3	2			1	1	12						1	1							13	0.2	38	0.3	<i>cubana</i>	
	25	3		2	4	2	15	1	1		2		1	2		3	2				2	2	5	2.6	<i>derby</i>	
																					134	2.3	283	2.6	<i>enteritidis</i>	
																					465	8.0	783	7.2		
		2					4														16	0.3	39	0.4	<i>give</i>	
1	28	5	1	7	3	1	12				1		10	2		8	2			1	288	4.9	649	5.9	<i>heidelberg</i>	
					1																28	0.5	70	0.6	<i>indiana</i>	
	6	6		1	4	1	15		2		5		4			6	1			5	289	4.9	746	6.8	<i>infantis</i>	
1	3	8			4		1	2	2		3		1						1	3	147	2.5	231	2.1	<i>java</i>	
	1	1		3	6	1	10						4								75	1.3	167	1.5	<i>javana</i>	
	1	1					4						1	1							42	0.7	74	0.7	<i>litchfield</i>	
							3														9	0.2	32	0.3	<i>livingstone</i>	
1	7	2					1	1													82	1.4	158	1.4	<i>manhattan</i>	
	1		1																		16	0.3	40	0.4	<i>miami</i>	
	4	4	1		2		3														25	0.4	34	0.3	<i>mississippi</i>	
		1			2		4										1				62	1.1	135	1.2	<i>montevideo</i>	
	2	5		2	5		5						5	2		1					105	1.8	196	1.8	<i>muenchen</i>	
																					9	0.2	18	0.2	<i>newington</i>	
3	7	5	1	16	7	4	34		1		7		2	1		7	3			9	418	7.1	756	6.9	<i>newport</i>	
1	6	3		1	26	1	18						7	1							86	251	4.3	326	3.0	<i>oranienburg</i>
							6						1								14	33	0.6	77	0.7	<i>panama</i>
							7									1					44	0.8	85	0.8	<i>paratyphi B</i>	
							1						1			5	1				1	18	0.3	38	0.3	<i>reading</i>
	4			4	1	9		1								3	3			2	10	190	3.2	378	3.5	<i>saint-paul</i>
	4																									
		1				1	5				1		1								17	0.3	51	0.5	<i>san-diego</i>	
							3														5	0.1	18	0.2	<i>schwarzengrund</i>	
							1														1	35	0.6	87	0.8	<i>senftenberg</i>
							3														1	13	0.2	24	0.2	<i>tennessee</i>
2	10	7	1	3	5	8	8	1	1					2		1	1			1	7	149	2.5	283	2.6	<i>thompson</i>
2	2			4	9	1	8						4	3		2					91	1.6	195	1.8	<i>typhi</i>	
13	55	18	1	7	33	17	72	2	10		16		14	8	1	17	5			26	1651	28.2	2828	25.9	<i>typhimurium</i>	
				1	8				1				7				2				56	1.0	115	1.1	<i>typhimurium v cop</i>	
							1														26	0.5	49	0.4	<i>weltevreden</i>	
	1						1														11	0.2	19	0.2	<i>worthington</i>	
33	173	80	6	47	134	34	280	7	19	1	39	4	67	21	1	63	24	-	10	202	5107	87.3	9580	87.7	TOTAL	
4	33	2	21	62	12	4	48	-	-	-	3	59	8	1	4	2	7	-	9	6	740		1345		ALL OTHER*	
37	206	82	27	109	146	38	328	7	19	1	42	63	75	22	5	65	31	-	19	208	5847		10925		TOTAL	

\*See Table II.

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, SECOND QUARTER, 1972

SEROTYPE	REPORTING CENTER																						
	ALA	ALK	ARI	ARK	COL	CON	DEL	DC	FLA	GA	HAW	ILL	IND	IOW	KAN	KY	LA	ME	MD	MAS	MIC	MIN	MIS
<i>abderdeen</i>																							
<i>abony</i>																							
<i>agona</i>				25		1						12					6		5	1	6		2
<i>albany</i>												1					1						
<i>atlanta</i>										5													
<i>austin</i>																							
<i>berta</i>			1										1				1		1			1	
<i>bovis-morbificans</i>						1						2					1						
<i>brandenburg</i>																	1					1	
<i>california</i>	1																			3			
<i>carrau</i>									1														
<i>cerro</i>											1												
<i>cholerae-suis</i>										1	1												
<i>colorado</i>																							
<i>drypool</i>																						1	
<i>dublin</i>																							
<i>duesseldorf</i>																							1
<i>eastbourne</i>																	1						
<i>eimsbuettel</i>												1											
<i>friedenau</i>												1											
<i>gallinarum</i>																							
<i>gaminara</i>									1								1		1				
<i>glostrup</i>			2																				
<i>grumpensis</i>																							
<i>habana</i>									3														
<i>halmstad</i>																							
<i>hartford</i>									4	2									1				
<i>heilbron</i>																							
<i>ibadan</i>					1																		
<i>inverness</i>									1														
<i>johannesburg</i>									1													1	
<i>kaapstad</i>					1	1																	
<i>kentucky</i>	1		1																				
<i>kottbus</i>						2																	1
<i>london</i>					1	1			1	4		3	4	2				1	5	2	3		
<i>madelia</i>												2										1	
<i>matadi</i>					2																		
<i>meleagridis</i>																						2	
<i>minnesota</i>									1							2			2				
<i>mission</i>									1														
<i>missouri</i>																							
<i>mobeni</i>									1														
<i>molade</i>									1														
<i>muenster</i>									1	1		1											
<i>new-brunswick</i>				27													1						
<i>new-mexico</i>			1																				
<i>norwich</i>				1								1							2		1		
<i>ohio</i>											1												
<i>oslo</i>											4									1			
<i>paratyphi A</i>											1	1											
<i>pensacola</i>																							1
<i>phoenix</i>												1							1				
<i>poona</i>			3									1			1								
<i>potsdam</i>									1														
<i>rubislaw</i>									2														
<i>saphra</i>																							
<i>siegburg</i>									1	3		3									4		
<i>sinstorf</i>									1														
<i>stanley</i>																							1
<i>taksony</i>																						1	
<i>tallassee</i>									1				1										
<i>thomasville</i>																							
<i>uganda</i>									1			1								1			
<i>urbana</i>																							
<i>virchow</i>																							
<i>wassenaar</i>											1												
<i>westhampton</i>																1							
TOTAL	2	-	8	54	3	6	-	-	24	18	6	31	6	2	1	3	12	1	19	12	22	6	2
NOT TYPED*	-	9	-	8	-	-	2	43	2	-	-	6	-	-	-	1	-	-	-	1	3	-	19
TOTAL	2	9	8	62	3	6	2	43	26	18	6	37	6	2	1	4	12	1	19	13	25	6	21

\*See Table V-A

TABLE II. - Continued

REPORTING CENTER																				TOTAL	CUMU- LATIVE TOTAL	SERO TYPE				
MO	NEB	NEV	NH	NJ	NM	NYA	NYB	NYC	NC	OHI	OKL	ORE	PA	RI	SC	TEN	TEX	UTA	VA				WAS	WVA	WIS	
								1															1	1	<i>aberdeen</i>	
									3			1	41				4	1					1	1	<i>abony</i>	
																							1	107	<i>agona</i>	
																								9	24	<i>albany</i>
																								5	5	<i>atlanta</i>
			2		3									1				1						1	1	<i>austin</i>
								2															1	11	26	<i>berta</i>
1																								4	8	<i>bovis-morbificans</i>
																								4	4	<i>brandenburg</i>
																								5	7	<i>california</i>
								1																1	1	<i>carrau</i>
								1																3	7	<i>cerro</i>
								2																4	9	<i>cholerae-suis</i>
																			1					1	2	<i>colorado</i>
																								1	3	<i>drypool</i>
										1														1	11	<i>dublin</i>
																		1						2	6	<i>duesseldorf</i>
																								1	1	<i>eastbourne</i>
																								1	10	<i>eimsbuettel</i>
																								1	1	<i>friedenau</i>
								1						1										1	1	<i>gallinarum</i>
																								6	10	<i>gaminara</i>
														1										1	1	<i>glostrup</i>
																								1	2	<i>grumpensis</i>
																								3	7	<i>habana</i>
								1																2	2	<i>halmstad</i>
3								1																7	13	<i>hartford</i>
																								3	4	<i>heilbron</i>
															1									4	4	<i>ibadan</i>
																								1	1	<i>inverness</i>
																								5	6	<i>johannesburg</i>
																								1	4	<i>kaapstad</i>
								3																9	17	<i>kentucky</i>
2								1		2				2									1	53	101	<i>kottbus</i>
										1														17	32	<i>london</i>
																								1	1	<i>madelia</i>
																								2	2	<i>matadi</i>
																								6	12	<i>meleagridis</i>
				1																				7	9	<i>minnesota</i>
																								1	2	<i>mission</i>
								1																1	1	<i>missouri</i>
																								1	1	<i>moheni</i>
																								1	1	<i>molade</i>
																								6	17	<i>muenster</i>
																								28	28	<i>new-brunswick</i>
																								1	1	<i>new mexico</i>
1																								7	10	<i>norwich</i>
																								3	6	<i>ohio</i>
																								5	5	<i>oslo</i>
																								2	2	<i>paratyphi A</i>
																								2	4	<i>pensacola</i>
																								1	1	<i>phoenix</i>
																								17	43	<i>poona</i>
1																								1	3	<i>potsdam</i>
																								7	8	<i>rubislaw</i>
																								1	1	<i>saphra</i>
																								20	26	<i>stegburg</i>
																								1	2	<i>sinstorf</i>
																								1	3	<i>stanley</i>
																								1	2	<i>taksony</i>
																								2	11	<i>tallahassee</i>
																								2	8	<i>thomasville</i>
																								4	7	<i>uganda</i>
																								8	12	<i>urbana</i>
2																								3	5	<i>virchow</i>
																								1	2	<i>wassenaar</i>
																								2	2	<i>westhampton</i>
10	-	2	-	8	-	-	9	11	11	1	-	2	47	-	3	32	38	1	3	2	2	4	4	424	760	TOTAL
-	4	2	7	-	59	105	2	2	2	-	4	5	-	12	1	1	10	-	-	-	-	6	316	585	NOT TYPED*	
10	4	4	7	8	59	105	11	13	13	1	4	7	47	12	4	33	48	1	3	2	2	10	740	1345	TOTAL	

\*See Table V-A

TABLE III. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES, SECOND QUARTER, 1972

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>		3	2		2		7	2			2
<i>bareilly</i>							—	5			5
<i>blockley</i>					2	1	3				—
<i>braenderup</i>						1	1				—
<i>bredeney</i>						1	1			7	7
<i>chester</i>							—				—
<i>cholerae-suis v kun</i>							—				—
<i>cubana</i>							—	3		1	4
<i>derby</i>			24				24			2	2
<i>enteritidis</i>							—				—
<i>give</i>			1				1	3			3
<i>heidelberg</i>					1	1	2				—
<i>indiana</i>							—				—
<i>infantis</i>						1	1	2			2
<i>java</i>						1	1				—
<i>javana</i>							—				—
<i>litchfield</i>							—				—
<i>livingstone</i>						1	1				—
<i>manhattan</i>							—	1			1
<i>miami</i>							—				—
<i>mississippi</i>							—				—
<i>montevideo</i>							—	14		2	16
<i>muenchen</i>				2			2				—
<i>newington</i>			1				1				—
<i>newport</i>				7		2	9				—
<i>oranienburg</i>							—			14	14
<i>panama</i>			2				2				—
<i>paratyphi B</i>							—				—
<i>reading</i>						1	1				—
<i>saint-paul</i>						1	1				—
<i>san-diego</i>							—				—
<i>schwarzengrund</i>							—	3		1	4
<i>senftenberg</i>			1				1	6		9	15
<i>tennessee</i>	1						1	24		1	25
<i>thompson</i>							—				—
<i>typhi</i>							—				—
<i>typhimurium</i>			1	19	4	6	30	1		8	9
<i>typhimurium v cop</i>				4			4				—
<i>weltevreden</i>							—				—
<i>worthington</i>						3	3	1			1
TOTAL	1	3	32	32	9	20	97	65	—	45	110
ALL OTHER*	2	—	17	1	—	7	27	68	—	36	104
TOTAL	3	3	49	33	9	27	124	133	—	81	214

\*See Table IV

TABLE III - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
		1	2	1			4	3	16	30	<i>anatum</i>
	1		2				-	1	6	11	<i>bareilly</i>
	3	3					2		6	9	<i>blockley</i>
	2						3		7	10	<i>braenderup</i>
							-	1	11	15	<i>bredeney</i>
			1				1		1	1	<i>chester</i>
							-	1	1	1	<i>cholerae-suis v kun</i>
		14					14	2	20	27	<i>cubana</i>
							-	7	33	41	<i>derby</i>
	1						-	2	3	14	<i>enteritidis</i>
	1		1				-	10	15	18	<i>give</i>
				1			1	4	7	39	<i>heidelberg</i>
1	1						1		1	3	<i>indiana</i>
	7						-	2	7	32	<i>infantis</i>
							-		8	20	<i>java</i>
							-		-	1	<i>javana</i>
	3						-		3	7	<i>litchfield</i>
							-	1	2	7	<i>livingstone</i>
	1						-	10	12	20	<i>manhattan</i>
							-		-	-	<i>miami</i>
							-		-	-	<i>mississippi</i>
	1						-	2	18	42	<i>montevideo</i>
							-		3	6	<i>muenchen</i>
							-		1	1	<i>newington</i>
	5					8	8	1	23	45	<i>newport</i>
				4			4	3	21	24	<i>oranienburg</i>
							-		2	2	<i>panama</i>
	5						-	2	7	12	<i>paratyphi B</i>
							-	1	2	2	<i>reading</i>
3	5	17					17	1	27	50	<i>saint-paul</i>
							-		-	3	<i>san-diego</i>
							-		4	8	<i>schwarzengrund</i>
						2	2		18	50	<i>senftenberg</i>
					1		1		27	27	<i>tennessee</i>
	1		1				1	4	6	18	<i>thompson</i>
							-	2	2	2	<i>typhi</i>
3	3		1			1	2	3	50	112	<i>typhimurium</i>
1							-	6	11	11	<i>typhimurium v cop</i>
							-		-	-	<i>weltevreden</i>
							-		4	10	<i>worthington</i>
8	40	35	8	6	1	11	61	69	385	731	TOTAL
11	21	-	10	-	1	12	23	25	211	436	ALL OTHER*
19	61	35	18	6	2	23	84	94	596	1167	TOTAL

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, SECOND QUARTER, 1972

SERO TYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>abaetetuba</i>							-				-
<i>agona</i>							-	1			1
<i>alachua</i>							-			2	2
<i>albany</i>							-			1	1
<i>amsterdam</i>						2	2				-
<i>arechavaleta</i>						1	1				-
<i>berta</i>						1	1				-
<i>binza</i>							-			1	1
<i>california</i>							-				-
<i>cerro</i>							-	3		7	10
<i>cholerae-suis</i>			12				12				-
<i>drypool</i>						1	1	4		1	5
<i>eimsbuettel</i>	1					1	1	20		2	22
<i>gallinarum</i>							1				-
<i>godesberg</i>							-	1			1
<i>habana</i>							-	3		1	4
<i>hartford</i>							-				-
<i>illinois</i>							-			2	2
<i>johannesburg</i>							-	4			4
<i>kentucky</i>							-	4		4	8
<i>limete</i>							-				-
<i>manila</i>							-	10		7	17
<i>matadi</i>							-				-
<i>meleagridis</i>			5				5	1			1
<i>minneapolis</i>				1			1				-
<i>minnesota</i>							-			3	3
<i>muenster</i>							-			1	1
<i>paratyphi A</i>							-				-
<i>pomona</i>							-				-
<i>poona</i>						1	1			2	2
<i>pullorum</i>	1						1				-
<i>siegburg</i>							-	6			6
<i>thomasville</i>							-	10		2	12
<i>urbana</i>							-				-
TOTAL	2	-	17	1	-	7	27	67	-	36	103
NOT TYPED*	-	-	-	-	-	-	-	1	-	-	1
TOTAL	2	-	17	1	-	7	27	68	-	36	104

\*See Table VB



TABLE IV – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPES
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
	1						- - - -	2	1 3 2 1 2	1 4 3 1 2	<i>abaetetuba</i> <i>agona</i> <i>alachua</i> <i>albany</i> <i>amsterdam</i>
	3		6		1	11	- - - 18 -	1 6	1 5 1 24 10	1 7 9 41 23	<i>archavaleta</i> <i>berta</i> <i>binza</i> <i>california</i> <i>cerro</i>
							- - - - -		12 6 23 1 1	33 18 45 1 4	<i>cholerae-suis</i> <i>drypool</i> <i>eimsbuettel</i> <i>gallinarum</i> <i>godesberg</i>
1							- - - - -		4 1 2 4 8	6 2 4 19 23	<i>habana</i> <i>hartford</i> <i>illinois</i> <i>johannesburg</i> <i>kentucky</i>
	1					1	1 - - - -		1 17 1 6 1	1 18 1 8 1	<i>limete</i> <i>manila</i> <i>matadi</i> <i>meleagridis</i> <i>minneapolis</i>
5	1 4						- - - - -	1	3 1 1 1 12	4 1 1 2 14	<i>minnesota</i> <i>muenster</i> <i>paratyphi A</i> <i>pomona</i> <i>poona</i>
1 2			1				1 - - -		3 8 12 5	7 26 22 9	<i>pullorum</i> <i>siegburg</i> <i>thomasville</i> <i>urbana</i>
9	15	-	7	-	1	12	20	10	184	386	TOTAL
2	6	-	3	-	-	-	3	15	27	50	NOT TYPED*
11	21	-	10	-	1	12	23	25	211	436	TOTAL

\*See Table VB

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, SECOND QUARTER, 1972

## A. HUMAN SOURCES

REPORTING CENTER	GROUP										TOTAL
	B	C	C1	C2	D	E	E4	F	G	UNK.	
ALASKA	5		1	1	1	1					9
ARKANSAS	2		2	2	1				1		8
DELAWARE										2	2
D.C.	20	5	1	3	2	2	1			9	43
FLORIDA			1							1	2
ILLINOIS	6										6
KENTUCKY			1								1
MASSACHUSETTS	1										1
MICHIGAN	1					1				1	3
MISSISSIPPI	10	1	1	4		1			1	1	19
NEBRASKA	3		1								4
NEVADA	2										2
NEW HAMPSHIRE	4		1		1					1	7
NEW MEXICO	22		16	10	6	2		2	1		59
NEW YORK-A	1	2								102	105
NEW YORK-BI	1			1							2
NEW YORK-C	2										2
NORTH CAROLINA										2	2
OKLAHOMA	1									3	4
OREGON	1		1	1	1					1	5
RHODE ISLAND	3		7				1			1	12
SOUTH CAROLINA										1	1
TENNESSEE	1										1
TEXAS	1					1			1	7	10
WISCONSIN	3									3	6
<b>TOTAL</b>	<b>90</b>	<b>8</b>	<b>33</b>	<b>22</b>	<b>12</b>	<b>9</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>135</b>	<b>316</b>

## B. NONHUMAN SOURCES

REPORTING CENTER	GROUP										TOTAL
	B	C	C1	C2	D	E	E4	F	G	UNK.	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT											-
ANIMAL FEEDS		1									1
WILD ANIMALS AND BIRDS										2	2
REPTILES AND ENVIRONMENT	1									5	6
HUMAN DIETARY ITEMS	1			2							3
MISCELLANEOUS	4		4	2		4				1	15
<b>TOTAL</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>-</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8</b>	<b>27</b>

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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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