

CENTER FOR DISEASE CONTROL

# **SALMONELLA**

## **SURVEILLANCE**

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FIRST QUARTER 1972

- I. SUMMARY
- II. REPORTS OF ISOLATIONS
- III. 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 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:

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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. Extrapolations from these data to the unreported majority of salmonellosis cases should be made only with appropriate caution.



## I. SUMMARY

In the first quarter of 1972, 5,078 isolations of salmonella were reported from humans, an average of 391 isolations per week (Tables I, II, and V-A). This number represents a decrease of 128 (24.7 percent) from the weekly average for the fourth quarter of 1971, and a decrease of 24 (5.8 percent) from the weekly average for the first quarter of 1971. Average weekly numbers of reported human isolations for each month in the first quarter are provided below for the last 3 years:

	<u>1970</u>	<u>1971</u>	<u>1972</u>
January	386	505	448
February	327	371	362
March	<u>333</u>	<u>378</u>	<u>364</u>
First Quarter	349	415	391

Reports of 571 nonhuman isolates of salmonella were received in the first quarter of 1972 (Tables III, IV, and V-B).

## II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes in the first quarter included the following:

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank Last Quarter	Serotype	Number	Percent
typhimurium*	1236	24.4	1	typhimurium*	62	10.9
infantis	457	9.0	4	heidelberg	32	5.6
heidelberg	361	7.1	5	senftenberg	32	5.6
newport	338	6.7	2	infantis	25	4.4
enteritidis	318	6.3	3	montevideo	24	4.2
saint-paul	188	3.7	7	saint-paul	23	4.0
derby	149	2.9	8	eimsbuettel	22	3.9
thompson	134	2.6	6	newport	22	3.9
blockley	109	2.1	12	cholerae-suis	21	3.7
typhi	<u>104</u>	<u>2.0</u>	<u>9</u>	siegburg	<u>18</u>	<u>3.2</u>
Total	3394	66.8		Total	281	49.2
TOTAL				TOTAL		
(all serotypes)	5078	100.0		(all serotypes)	571	100.0
*includes var.				*includes var.		
copenhagen	59	1.2		copenhagen	0	0.0

### III. REPORTS FROM THE STATES

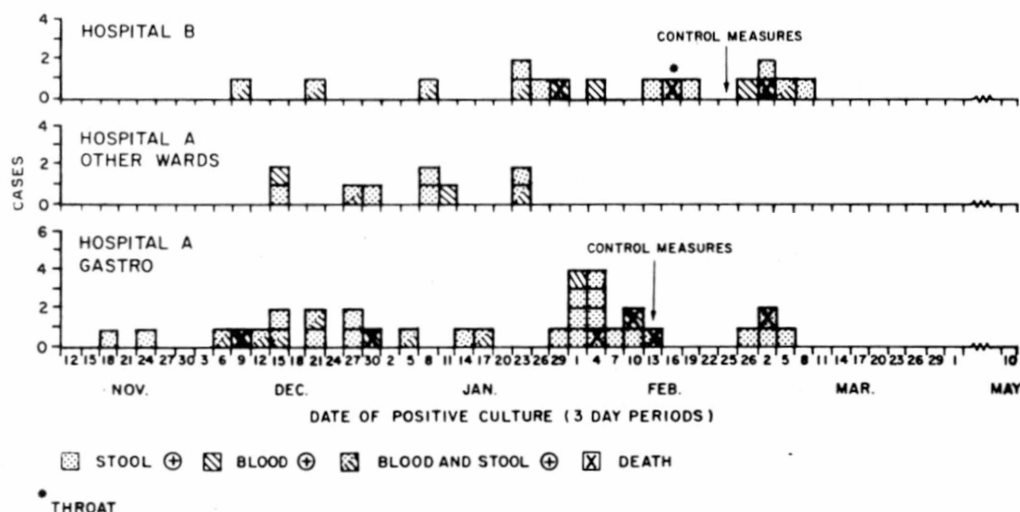
#### A. Reports of Salmonella Outbreaks Received During the First Quarter, 1972

State	Month of Outbreak	Location	Serotype	Number of People				Deaths	Vehicle	Comment
				Ill	At Risk	With Positive Cultures	Hospitalized			
Minnesota	September	Ramsey County	<u>S. typhimurium</u>	5	21	4	4	0	Lemon pie	Contaminated eggs
Wisconsin	September	Milwaukee	<u>S. thompson</u>	5	?	4	3	0		Barbecue stand-cook ill with positive culture
Florida	December	Dade County	<u>S. infantis</u>	8	?	2	2	0	?food	Restaurant outbreak
Pennsylvania	December	Philadelphia	<u>S. derby</u>	2	?	7	0	0	?food, carriers	Outbreak in three municipal institutions
Ohio	December-January	Cleveland	<u>S. indiana</u>	14	?	15	14	0	person-to-person	Reported in detail in this issue
Puerto Rico	December-February	San Juan	<u>S. heidelberg</u>	57	200	62	57	9	person-to-person	Reported in detail in this issue
Georgia	January	Atlanta	<u>S. typhimurium</u>	?	?	?	1	0	unknown	Food served to two groups at motel
Florida	February	Dade County	<u>S. typhi</u>	1	7	2	1	0	carrier	Grandfather in household convalescent carrier
Hawaii	February	Kauai	<u>S. typhi</u>	1	?	2	0	0	carrier	Grandfather in household was carrier

B. Salmonella heidelberg on Two Pediatric Wards in Puerto Rico. Reported by Luis Mainardi, M.D., State Epidemiologist, San Juan, Puerto Rico; Juan Jiménez, M.D., Chairman, Department of Pediatrics, San Juan Municipal Hospital; the Epidemiology Services Laboratory, CDC; and Philip C. Craven, M.D., EIS Officer, Puerto Rico.

Between November 19, 1971, and March 8, 1972, 57 children who were ill with diarrhea on the pediatric wards of two adjacent hospitals in San Juan, Puerto Rico, had group B salmonella isolated from stools and blood or both (Figure 1). All had diarrhea; 24 (42%) developed salmonella septicemia, and nine of these died. The organism subsequently shown to be S. heidelberg was introduced into one of the hospital's pediatric wards by a patient admitted with acute salmonella gastroenteritis. His stool culture was positive for group B salmonella at the time of admission. Introduction to the second hospital occurred when a child present at the first hospital early in the epidemic was subsequently admitted to the second hospital. His stool and blood culture were positive for group B salmonella at that time. Each of the patients was the index case on his respective ward and hospital; no other patients cultured at the time of their first admission were found to be positive for group B salmonella, although five were positive upon readmission. Contamination spread from bed to bed and room to room. In one instance a cluster of three cases outside the most heavily contaminated areas was directly related to a nurse identified as an asymptomatic carrier. In addition to the nurse, two physicians and two people working in the formula preparation room were identified as asymptomatic carriers. Neither formulas nor specific IV fluids were implicated as a common source when the prevalence of their usage between the salmonella-infected patients and suitable control groups was compared. Cultures of the formulas at different stages of preparation were negative for S. heidelberg.

Figure 1 CASES OF SALMONELLOSIS, BY DATE OF FIRST POSITIVE CULTURE, NOVEMBER 12, 1971 TO MAY 10, 1972, SAN JUAN, PUERTO RICO



In February recognized carriers were removed, and "clean" areas were established on both pediatric wards for the admission of new patients. These areas were thoroughly cleaned and staffed with nurses whose stool cultures were salmonella-free. Strict isolation techniques were applied. Two weeks after control measures were instituted a stool culture survey in one hospital's pediatric wards yielded no positive cultures in the area. Since March 8, no new salmonella group B cultures have been reported by the combined municipal-university bacteriology laboratory from pediatric wards of either hospital.

**Editor's Comment:** The high rate of sepsis in this epidemic has not yet been adequately explained. In a previous study of salmonellosis, sepsis or enteric fever was noted in only 7.8 percent of 192 *S. heidelberg* cases collected in 1965-1966.<sup>1</sup>

C. *Salmonella indiana* on a Pediatric Ward in Cleveland. Reported by Y. Nang Paul Lee, M.D., Intern, Department of Pediatrics, Cleveland Metropolitan General Hospital; and Alfred Fevrier, M.D., EIS Officer, Cleveland Metropolitan General Hospital.

From December 20, 1971, to January 8, 1972, four children on a pediatric ward at Cleveland Metropolitan General Hospital had positive stool cultures for *S. indiana*. Two had previously had negative stool cultures. The other two children developed diarrhea and positive stool cultures 10 and 41 days after admission after having been placed on ampicillin. The organism recovered was resistant to ampicillin, tetracycline, and carbenicillin.

On January 14 stools or rectal swabs from all children on the involved ward and from 62 hospital personnel known to have been in contact with the patients on this ward were cultured. A total of nine additional children were found to be positive for *S. indiana*. Six of the patients had previously had negative stool cultures. The survey of the hospital personnel revealed one carrier of *S. indiana* among the nurses. She had been asymptomatic, and her culture, positive on January 21, spontaneously reverted to negative by January 25.

The day after the stool culture survey a 3-month-old infant presented to the emergency room with diarrhea. Her admission stool culture revealed *S. indiana*. A stool culture survey of this patient's family revealed that of seven family members

1. Cherubin CE, Fodor T, Denmark L, et al: The epidemiology of salmonellosis in New York City. Am J Epidemiol 90:112, 1969

only her grandmother was positive for S. indiana. Negative cultures were also obtained from three attendants and two infants at the day-care center that cared for the child. No relationship could be established between this patient and the other cases.

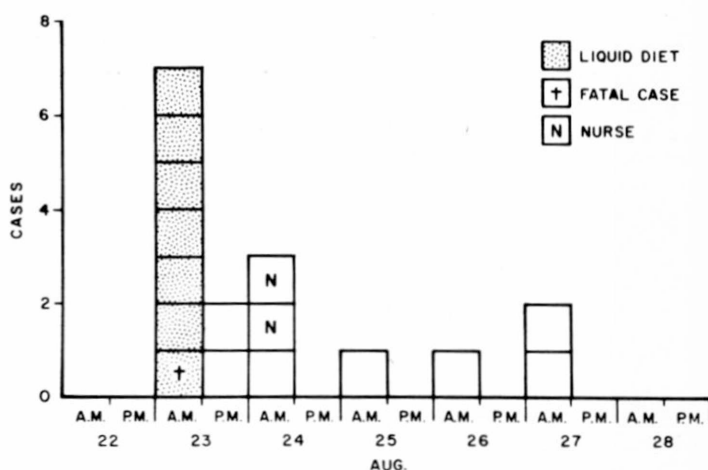
No other cases of S. indiana infection were discovered elsewhere in the hospital. On January 14 strict isolation procedures were instituted and careful handwashing was emphasized among the hospital personnel. No subsequent cases were identified.

Editor's Comment: The restricted location of the outbreak and its prompt subsidence with initiation of proper control measures suggest that the outbreak was maintained by patient-to-patient spread by hospital personnel. It is possible that the treatment of two of the patients with ampicillin predisposed them to symptomatic infection when exposed to the ampicillin-resistant organism by altering their gastrointestinal microflora.<sup>1,2</sup>

D. Salmonella montevideo in a Nursing Home in Puerto Rico. Reported by Rafael Correa Coronas, M.D., Epidemiologist, Puerto Rico Department of Health; and Philip C. Craven, M.D., EIS Officer, Puerto Rico.

On August 23, 1971, nine cases of acute gastroenteritis occurred in the 76 patients of the Centro Geriatrico Dr. Juan A. Pons, a municipally funded home for the aged and infirm in Rio Piedras, Puerto Rico. One patient died. Over the next 4 days there were a total of seven more cases at the center, including two in nurses attending the patients (Figure 2). Stool cultures from 10 of the patients revealed S. montevideo.

Figure 2 SALMONELLOSIS AT CENTRO GERIATRICO, BY ONSET OF FEVER



Review of the patients' charts and diet records revealed that the first wave of the outbreak was largely restricted to patients on liquid diets. Seven of 11 such patients were ill, for an attack rate of 64 percent; only two of the 65 remaining patients, not on liquid diets, became ill on the first day. The only foods unique to the liquid diet were a puree of squash and potatoes and a commercial protein supplement powder. No samples of the puree were available for culture at the time of the investigation, but the protein supplement was cultured and found to be free of salmonella.

1. Black PA, Kuntz LJ, Swartz MN: Salmonellosis--A review of some unusual aspects (continued). New Eng J Med 262:864, 1960.

2. Adler JL, Anderson RL, Boring JR III, et al: A protracted hospital-associated outbreak of salmonellosis due to a multiple-antibiotic-resistant strain of Salmonella indiana. J Ped 77:970, 1970.

A stool culture survey was performed on the 17 kitchen employees. Two asymptomatic kitchen workers, who served trays and cleaned equipment, had stools positive for S. montevideo. Stool cultures were obtained from the two nurses who had been ill after they had been given chloramphenicol; no salmonella was isolated from them.

On August 27, the Centro Geriatrico stopped accepting new patients, isolated ill patients, initiated a general cleanup, emphasized handwashing to the employees, and removed powdered milk and the protein supplement from the diets. No further clinical cases were noted.

Editor's Comment: The initial cluster of patients on liquid diets suggests that this may have been the contaminated vehicle. The other cases were presumably secondary cases related to patient-to-patient spread by the staff in a manner typical of institutional outbreaks.<sup>1</sup>

#### IV. SPECIAL REPORTS

##### A. Salmonella and Pet Turtles, Status Report

A joint proposal by the Center for Disease Control and the Food and Drug Administration concerning legislation to regulate the importation and interstate shipment of pet turtles has been published in the Federal Register (Vol. 37, #68, Friday, April 7, 1972). The proposal is currently under review.

##### B. Announcement of CDC Course #8490C: Detection of Salmonella in Foods and Feeds by Fluorescent Antibody and Cultural Methods

The Epidemiology Program and the Laboratory Division of the Center for Disease Control will conduct a course on methods for detecting salmonella in food products and animal feeds on January 8-19, 1973. Academic training and practical laboratory experience are prerequisites for this course. The course is divided equally between lectures and laboratory exercises. Lectures will include sampling methods, principles of isolation and identification, and fluorescent antibody methods of detection. Laboratory exercises include fluorescent antibody techniques for detecting salmonella and all necessary steps in the isolation and preliminary biochemical and serologic identification of salmonella. Various foods and feeds such as eggs, dry milk, candy, red meats, poultry, animal by-products, and fish meal will be examined.

State, federal, and industry personnel may obtain application forms by writing to the Laboratory Division, Center for Disease Control, Attention: Laboratory Training, Atlanta, Georgia 30333.

There is no charge for the course, but enrollment is limited to 20 students. This course replaces our previous course entitled, "Isolation of Salmonella from Food Products and Animal Feeds."

##### C. Recent Articles on Salmonellosis.

1. Altman R, Gorman JC, Bernhardt LL, et al: Turtle-associated salmonellosis. II. The relationship of pet turtles to salmonellosis in children in New Jersey. Am J Epidemiol 95:518, 1972
2. Conn NK, Haymann CS, Jamieson A, et al: Water-borne typhoid fever caused by an unusual Vi-phage type in Edinburgh. J Hyg 70:245, 1972
3. Davies JW, Cox KG, Simon WR, et al: Typhoid at sea: Epidemic aboard an ocean liner. Canad Med Assoc J 106:877, 1972
4. Faierman D, Rose FA, Seckler SG: Typhoid fever complicated by hepatitis, nephritis, and thrombocytopenia. JAMA 221:60, 1972
5. Kaufmann AF, Fox MD, Morris GK, et al: Turtle-associated salmonellosis. III. The effects of environmental salmonellae in commercial turtle breeding ponds. Am J Epidemiol 95:521, 1972
6. Lamm SH, Taylor A Jr, Gangarosa EJ, et al: Turtle-associated salmonellosis. I. An estimation of the magnitude of the problem in the United States, 1970-1971. Am J Epidemiol 95:511, 1972

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1. Gotoff SP, Boring JR, Lepper MH: An epidemic of Salmonella saint-paul infections in a convalescent home. Am J Med Sci 251:16, 1966

7. Nabbut NH, Kurayiyyah F: Survival of Salmonella typhi in sea-water. J Hyg 70:223, 1972
8. Osuntokun BO, Bademosi O, Ogunremi K, et al: Neuropsychiatric manifestations of typhoid fever in 959 patients. Arch Neurol 27:7, 1972
9. Rabinowitz SG, MacLeod NR: Salmonella meningitis: A report of three cases and review of the literature. Am J Dis Child 123:259, 1972
10. Sharr MM: Splenic abscess due to Salmonella agona. Brit Med J 1:546, 1972

D. Salmonella Surveillance Annual Summary 1971--Errata

1. Page 4, figure 3: Kansas should be shaded black.
2. Page 8, paragraph 1: Omit "...and dried milk" from line 5.
3. Table I: Correct Kansas data as follows:

<u>bareilly</u>	1
<u>blockley</u>	4
<u>bredeney</u>	4
<u>cubana</u>	7
<u>derby</u>	2
<u>enteritidis</u>	50
<u>heidelberg</u>	25
<u>indiana</u>	1
<u>infantis</u>	32
<u>java</u>	5
<u>javiana</u>	37
<u>miami</u>	1
<u>montevideo</u>	5
<u>muenchen</u>	16
<u>newington</u>	4
<u>newport</u>	38
<u>oranienburg</u>	6
<u>saint-paul</u>	6
<u>senftenberg</u>	5
<u>tennessee</u>	1
<u>thompson</u>	29
<u>typhi</u>	2
<u>typhimurium</u>	274
<u>worthington</u>	1
TOTAL	556
ALL OTHER	15
TOTAL	571

4. Table I: Change 1971 grand total from 25,649 to 25,694.

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, FIRST 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	OH	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
<i>anatum</i>					1	2		1	6	4	2	4		4	1	2									1							8
<i>bareilly</i>															3																1	
<i>blockley</i>	1			3		3	1	5	12	10	6	8	1	7	7	3	2	1	1				2		2		1		1	1	3	7
<i>braenderup</i>				1				2		1	1	1		1	2		1												1			6
<i>bredeney</i>				1	1	1		1	1	3	2	4		2			1										1				4	7
<i>chester</i>						1				1				2		3																
<i>cholerae-suis v kun</i>													1		1															1		1
<i>cubana</i>				1				1		1	3	4		3	1										1		2				1	2
<i>derby</i>						1		7	11	5	9	11		7	8	1			1				11		14		2	1			6	9
<i>enteritidis</i>	6			18	1	11	1	36	39	13	19	22	8	32	11	15	2		4	1			2		15		4	1	1	3	5	9
<i>give</i>				1							4	2	2	2											1				1			
<i>heidelberg</i>	2			6	4	2		13	8	14	20	12	11	38	19	12	4	2	2				8		17	2	15		13	1	10	30
<i>indiana</i>									2		1	17		1		5												2	1	4	4	
<i>infantis</i>	2		1	24		3		11	21	12	27	20	10	23	13	8	3	3	7	4			11		12		18		7	2	18	49
<i>java</i>					1			1	9	2	3		2	9	1	2							3						3		3	8
<i>javiana</i>						1						4			3								2								2	37
<i>litchfield</i>								2	1		1	4	1	2	1										4				2		1	3
<i>livingstone</i>												1				6															1	
<i>manhattan</i>						1		4	3	2	3	12		5	8	1									6		1	2	5		2	3
<i>miami</i>										2					1																3	12
<i>mississippi</i>																																4
<i>montevideo</i>	1			9	5	2		2	1	5	5	4		3	3				1				1		1		4				1	3
<i>muenchen</i>				3		1		6	7	8	3			10	4				3						3		10		1		1	11
<i>newington</i>										2	2																					1
<i>newport</i>	1		1	10	2	4		8	11	15	6	14	2	26	8	22	1	3	5				5		4		4	1	20		8	42
<i>oranienburg</i>				2				1	1	2	7	4	2	3	3	1	1						2		2		5		1		4	6
<i>panama</i>				1		3		2	2	1	1	1		7												1				3		
<i>paratyphi B</i>			1	5		1		1		1		9			6		2										2	1				
<i>reading</i>				1		1		1		1		1		2													1					
<i>saint-paul</i>				13		3		7	10	5	3	11	6	7	11	8	2		1	1			2	2	8		2	1	6		11	20
<i>san-diego</i>				3				1		3	3			2		2								1	1				1		1	1
<i>schwarzengrund</i>												1					2	1						1			1				1	1
<i>senftenberg</i>										5				2	2	1			2				4	1	2		3				1	1
<i>tennessee</i>											2	2																				
<i>thompson</i>				15		3		8	8	4	7	1		6	7	1	1			1			6		5	1	2		1		5	13
<i>typhi</i>				4	1	3	3	5	7		2	1			3				6				2				3	1	1			13
<i>typhimurium</i>	4		3	33	8	34	1	31	65	33	59	34	17	75	37	53	15	8	23	4	3		15	4	47	3	25	1	20	1	46	58
<i>typhimurium v cop</i>				11		4					13				13			1														
<i>weltevreden</i>																																
<i>worthington</i>																															1	
TOTAL	17	-	6	165	24	85	6	157	227	167	202	206	64	281	174	146	40	19	56	11	3	-	76	9	146	6	108	9	87	11	146	370
ALL OTHER*	1	8	2	19	18	4	84	8	10	3	26	3	4	23	23	5	3	-	9	2	-	2	4	-	21	34	14	3	3	14	14	50
TOTAL	18	8	8	184	42	89	90	165	237	170	228	209	68	304	197	151	43	19	65	13	3	2	80	9	167	40	122	12	90	25	160	420

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 251 cultures.

\*See Table II.

TABLE 1 - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																					TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE TOTAL	SERO TYPE
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	1				1		9						1					9	1		59	1.2	59	1.2	anatum
																		1		1	6	0.1	6	0.1	bareilly
4	1				6		3											7			109	2.1	109	2.1	blockley
					1		4									1		6			29	0.6	29	0.6	braenderup
	2		1		2		4							1				6		1	46	0.9	46	0.9	bredeney
	1				1													2			11	0.2	11	0.2	chester
	1																				5	0.1	5	0.1	cholerae-suis v kun
							1						1					3			25	0.5	25	0.5	cubana
	7	1			3		10				1				1	1		13		8	149	2.9	149	2.9	derby
1	5			6	2	5	1	2			2		1	1				12		1	318	6.3	318	6.3	enteritidis
			1		1								6					1		1	23	0.5	23	0.5	give
4	5			2	4		15		1				7	1		6	5	37	2	7	361	7.1	361	7.1	heidelberg
	3				1													1			42	0.8	42	0.8	indiana
	8	21		4	16	3	30	1	4		4		4	2		3	1	42	1	4	457	9.0	457	9.0	infantis
1	2				11			1					1	1			1	16	1	2	84	1.7	84	1.7	java
		1	2		8	1	26						2				3	2			92	1.8	92	1.8	javana
	1						2											5			32	0.6	32	0.6	litchfield
							7											7			23	0.5	23	0.5	livingstone
	6				3													9			76	1.5	76	1.5	manhattan
	1				1													4			24	0.5	24	0.5	miami
	1	1			1		2											10	2		9	0.2	9	0.2	mississippi
		1			1		5	1			2							5			73	1.4	73	1.4	montevideo
	1	1			3		6							2			2				91	1.8	91	1.8	muenchen
							2													1	9	0.2	9	0.2	newington
1	10	1	1	6	10	1	28		4		13		8	2		7	1	20		2	338	6.7	338	6.7	newport
1	2	2			8		7									2		6			75	1.5	75	1.5	oranienburg
	1				2		2						1	1		1		5		9	44	0.9	44	0.9	panama
						3	2											7			41	0.8	41	0.8	paratyphi B
					1													3	8		20	0.4	20	0.4	reading
1	12		1	1	4		7	2								3	3	8		6	188	3.7	188	3.7	saint-paul
		1		1	1											5	1	5	1		34	0.7	34	0.7	san-diego
	1																	4			13	0.3	13	0.3	schwarzengrund
	1	2		1	1	2	3				5						1	12			52	1.0	52	1.0	senftenberg
						1												5		1	11	0.2	11	0.2	tennessee
	6	2		2	8		4				2			1		1	2	9		2	134	2.6	134	2.6	thompson
2	1			14			2					1	3	1				20		5	104	2.0	104	2.0	typhi
6	24	15	3	1	23	7	80	3	6		19		15	8		24	15	155	1	12	1,177	23.2	1,177	23.2	typhimurium
	5			6	2								3								59	1.2	59	1.2	typhimurium v cop
							1									2		2			22	0.4	22	0.4	weltevreden
		1																		1	8	0.2	8	0.2	worthington
23	109	52	7	38	130	20	267	9	17	-	48	1	53	21	1	56	38	464	9	86	4,473	88.1	4,473	88.1	TOTAL
-	11	2	17	10	7	-	10	-	1	-	1	28	8	2	-	7	8	50	25	4	605		605		ALL OTHER*
23	120	54	24	48	137	20	277	9	18	-	49	29	61	23	1	63	46	514	34	90	5,078		5,078		TOTAL



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

SERO TYPE	REPORTING CENTER																			
	ALA	ALK	ARI	ARK	CAL	COL	CON	DC	FLA	GA	HAW	IDA	ILL	IND	KAN	LA	ME	MD	MAS	MIC
agama					3								7			5		8		8
agona							1			2			1		3	1				
alachua									1											
albany																				
amager																				
amounderness																		1		
berlin					4									1					2	1
berta									2											
binza																				
birkenhead																				
bornum							1		1											
bovis-morbificans									2											
cairo																			1	
california																				
cerro									1		3									
chittagong																				
cholerae-suis																				
coleypark									1			1								
colorado																				
decatur																				
drypool					1															
dublin					7								1							
duesseldorf									4											
eimsbuettel		2					1		3									1		1
gaminara	1		1						1											
grumpensis																				
habana									1							1				
hamburg																				
hartford									3					1				1		
heilbron																				1
hvittingfoss									1											
isangi																				
johannesburg					1															
kaapstad									1											
kentucky					3				1											3
kottbus				1	5					4			2	1				2	15	2
lexington			1																	
loma-linda			1																1	
lomita																				
london							1		4	1			2							2
manchester																				
meleagridis					2								2							1
minneapolis																				2
minnesota													2							
mission																				
muenster	1								1				1							
norwich				1									1							
ohio					2															
paratyphi c													1							
pensacola									1											
poona			3	3	1	1			6	1					1					
potsdam																			2	
remo																				1
rubislaw									1											
siegburg					2				2				1							
sinstorf																				
stanley					2															
sundsvall																				
taksony			1																	
tallahassee									9											
tananarive													1							
tel-el-kebir					4															
thomasville																				
tucson										1										
uganda										3										
umhlatazana																				
urbana					1				1					1						
virchow											1									
wassenaar																				
TOTAL	2	2	8	5	39	1	4	-	48	12	4	1	23	4	4	7	-	13	19	21
NOT TYPED*	-	23	-	5	11	-	-	34	2	2	-	-	-	-	-	-	1	8	-	2
TOTAL	2	25	8	10	50	1	4	34	50	14	4	1	23	4	4	7	1	21	19	23

\*SEE TABLE V-A

TABLE II — Continued

REPORTING CENTER																						TOTAL	CUMUL. TOTAL	SERO TYPE	
NEB	NH	NJ	NM	NYA	NYB	NYC	NC	ND	OHI	ORE	PA	RI	SC	TEN	TEX	UTA	VT	VA	WAS	WVA	WIS				
					1	2				1	7 1 1			1						1		1	1 42 5 15 1	1 42 5 15 1	agama agona alachua albany amager
														1		1			2	4			1 15 3 1	1 15 3 1	amounderness berlin berta binza birkenhead
						1								1									1 4 1 2 4	1 4 1 2 4	bornum bovis morbificans cairo california cerro
						2	1		1		1						1						1 5 2 1 1	1 5 2 1 1	chittagong cholerae-suis coleepark colorado decatur
						1														1			2 10 4 9 4	2 10 4 9 4	drypool dublin duesseldorf eimsbuettel gaminara
							1						1		2					1			1 4 1 6 1	1 4 1 6 1	grumpensis habana hamburg hartford heilbron
											2 2 1												1 2 1 3 8	1 2 1 3 8	hvittingfoss isangi johannesburg kaapstad kentucky
					3		1			1		1	2	1				4			1		48 1 2 1 15	48 1 2 1 15	kottbus lexington loma-linda lomita london
		1									2							1					1 6 2 2 1	1 6 2 2 1	manchester melcagris minneapolis minnesota mussion
					2	1	1				4		1										11 3 3 1 2	11 3 3 1 2	muenster norwich ohio paratyphi c pensacola
						1		1			1							3	1		2		1 26 2 1 1	1 26 2 1 1	poimona poona potsdam remo rubislaw
						1						2			1								6 1 2 3 1	6 1 2 3 1	siegburg sinstorf stanley sundsvall taksony
														1									9 1 1 6 1	9 1 1 6 1	tallahassee tanananarive tel-el-kebir thomasville tucson
		1														1				1			3 1 4 2 1	3 1 4 2 1	uganda umhlatazana urbana virchow wassenaar
		2			7	10	3	1	3	3	26		4	11	9	1		14	7	1	5	336	336	TOTAL	
2	8	1	28	84	1			1		5		18	10		1	1	2			2		269	269	NOT TYPED*	
2	8	3	28	84	8	10	3	2	3	8	26	18	14	11	10	2	2	14	7	3	5	605	605	TOTAL	

\*SEE TABLE V-A

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

SERO TYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>			1	2			3	6		2	8
<i>bareilly</i>							—	5			5
<i>blockley</i>	2						2				
<i>braenderup</i>							—				
<i>bredeney</i>							—			3	3
<i>chester</i>							—				—
<i>cholerae-suis v kun</i>							—				—
<i>cubana</i>							—	3		1	4
<i>derby</i>			2			1	3	3			3
<i>enteritidis</i>						3	3			2	2
<i>give</i>							—	3			3
<i>heidelberg</i>	2		2	1			5				—
<i>indiana</i>							—			1	1
<i>infantis</i>						7	7	7		1	8
<i>java</i>							—				—
<i>javiana</i>						1	1				—
<i>litchfield</i>							—				—
<i>livingstone</i>						1	1			1	1
<i>manhattan</i>	6						6				—
<i>miami</i>							—				—
<i>mississippi</i>							—				—
<i>montevideo</i>							—	16		1	17
<i>muenchen</i>							—			2	2
<i>newington</i>							—				—
<i>newport</i>				3		7	10	1			1
<i>oranienburg</i>							—	1			1
<i>panama</i>							—				—
<i>paratyphi B</i>							—				—
<i>reading</i>							—				—
<i>saint-paul</i>		1		2		4	7				—
<i>san-diego</i>							—				—
<i>schwarzenrund</i>							—	1		3	4
<i>senftenberg</i>							—	23		6	29
<i>tennessee</i>							—				—
<i>thompson</i>						1	1	2			2
<i>typhi</i>							—				—
<i>typhimurium</i>				6		6	12			1	1
<i>typhimurium v cop</i>							—				—
<i>weltevreden</i>							—				—
<i>worthington</i>						1	1	3		2	5
TOTAL	10	1	5	14	—	32	62	74	—	26	100
ALL OTHER*	3	—	22	1	—	11	37	92	—	41	133
TOTAL	13	1	27	15	—	43	99	166	—	67	233

\*See Table IV

TABLE III - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON- MENT	HUMAN DIETARY ITEMS						MISCEL- LA- NEOUS	1970 TOTAL	1969 TOTAL	SERO TYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
	1			1			1	1	14	14	<i>anatum</i>
	1						-		5	5	<i>bareilly</i>
	1	1					1	1	3	3	<i>blockley</i>
	1						-		3	3	<i>braenderup</i>
	1						-		4	4	<i>bredeney</i>
							-		-	-	<i>chester</i>
	1				1		1	1	7	7	<i>cholerae-suis v kun</i>
1	1			1			1	1	8	8	<i>cubana</i>
							-	4	11	11	<i>derby</i>
1		7	2				-	17	3	3	<i>enteritidis</i>
1	4		1			4	9		32	32	<i>give</i>
9						3	1	1	2	2	<i>heidelberg</i>
							4	1	25	25	<i>indiana</i>
							3		12	12	<i>infantis</i>
	4						-		1	1	<i>java</i>
							-		4	4	<i>javana</i>
							-	3	5	5	<i>litchfield</i>
							-	2	8	8	<i>livingstone</i>
							-		-	-	<i>manhattan</i>
							-		-	-	<i>miami</i>
	4						-	3	-	-	<i>mississippi</i>
1							-		24	24	<i>montevideo</i>
							-		3	3	<i>muenchen</i>
7							-	4	-	-	<i>newington</i>
							-		22	22	<i>newport</i>
	2						-		3	3	<i>oranienburg</i>
	4					1	-		-	-	<i>panama</i>
							1		5	5	<i>paratyphi B</i>
1	13	2					15		-	-	<i>reading</i>
			2				2	1	23	23	<i>saint-paul</i>
							-		3	3	<i>san-diego</i>
1						2	-		4	4	<i>schwarzengrund</i>
							2		32	32	<i>senftenberg</i>
1	2	5	1				8		-	-	<i>tennessee</i>
							-		12	12	<i>thompson</i>
19	12		2		6		-	10	-	-	<i>typhi</i>
							8		62	62	<i>typhimurium</i>
							-		-	-	<i>typhimurium v cop</i>
							-		-	-	<i>weltevreden</i>
							-		6	6	<i>worthington</i>
22	56	23	14	3	7	10	57	49	346	346	TOTAL
11	12	-	1	2	-	6	9	23	225	225	ALL OTHER*
33	68	23	15	5	7	16	66	72	571	571	TOTAL

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

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>agona</i>							-				-
<i>alachua</i>							-	1			1
<i>beria</i>			1				1				-
<i>binza</i>							-	8			8
<i>bornum</i>							-	2			2
<i>california</i>	3					1	4	5		6	11
<i>carrau</i>							-				-
<i>cerro</i>							-	13			13
<i>charity</i>							-				-
<i>cholerae-suis</i>			21				21				-
<i>drypool</i>						1	1	6		4	10
<i>eimsbuettel</i>							-	21		1	22
<i>godesberg</i>							-	2		1	3
<i>habana</i>							-	1		1	2
<i>hartford</i>							-				-
<i>houten</i>							-				-
<i>illinois</i>						1	1	1			1
<i>johannesburg</i>						2	2	2		11	13
<i>kentucky</i>						1	1	13			13
<i>kottbus</i>							-				-
<i>lexington</i>							-	1		1	2
<i>lomita</i>				1			1				-
<i>manila</i>							-				-
<i>meleagridis</i>							-			1	1
<i>minnesota</i>							-	1			1
<i>new-brunswick</i>							-	1			1
<i>new-haw</i>							-	1			1
<i>norwich</i>							-				-
<i>orion</i>						1	1			4	4
<i>pomona</i>							-				-
<i>poona</i>							-	1			1
<i>pullorum</i>							-				-
<i>rubislaw</i>							-				-
<i>siegburg</i>						4	4	1		8	9
<i>stanley</i>							-				-
<i>thomasville</i>							-	10			10
<i>uphill</i>							-				-
<i>urbana</i>							-				-
<i>westhampton</i>							-				-
TOTAL	3	-	22	1	-	11	37	91	-	38	129
NOT TYPED*	-	-	-	-	-	-	-	1	-	3	4
TOTAL	3	-	22	1	-	11	37	92	-	41	133

\*SEE TABLE VB

TABLE IV - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON- MENT	HUMAN DIETARY ITEMS						MISCEL- LA- NEOUS	1971 TOTAL	1970 TOTAL	SEROTYPE
		EGGS PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
	1			1			1		1 1 2 8 2	1 1 2 8 2	<i>agona</i> <i>alachua</i> <i>berta</i> <i>binza</i> <i>bornum</i>
	1					2	2		17 1 13 1 21	17 1 13 1 21	<i>california</i> <i>carrau</i> <i>cerro</i> <i>charity</i> <i>cholerae-suis</i>
	1							1	12 22 3 2 1	12 22 3 2 1	<i>drypool</i> <i>cimsbuettel</i> <i>godesberg</i> <i>habana</i> <i>hartford</i>
	1								1 2 15 15 1	1 2 15 15 1	<i>houten</i> <i>illinois</i> <i>johannesburg</i> <i>kentucky</i> <i>kottbus</i>
				1			1	1			
									2 1 1 2 1	2 1 1 2 1	<i>lexington</i> <i>lomita</i> <i>manila</i> <i>meleagridis</i> <i>minnesota</i>
									1 1 1 7 1	1 1 1 7 1	<i>new-brunswick</i> <i>new-haw</i> <i>norwich</i> <i>orion</i> <i>pomona</i>
	1					1	1	2			
4	1								2 4 1	2 4 1	<i>poona</i> <i>pullorum</i> <i>rubislaw</i>
5	1								18 2	18 2	<i>siegburg</i> <i>stanley</i>
	1								10 1 4	10 1 4	<i>thomasville</i> <i>uphill</i> <i>urbana</i>
	4							1	1	1	<i>westhampton</i>
9	12	-	-	2	-	6	8	7	202	202	TOTAL
2	-	-	1	-	-	-	1	16	23	23	NOT TYPED*
11	12	-	1	2	-	6	9	23	225	225	TOTAL

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

**A. HUMAN SOURCES**

REPORTING CENTER	GROUP											TOTAL
	B	C	C1	C2	D	E	E1	E4	G	H	UNK	
ALASKA	7	2	8		3	1			2			23
ARKANSAS	3			1				1				5
CALIFORNIA	8						1				2	11
DISTRICT OF COLUMBIA	13	4		1	2						14	34
FLORIDA	1									1		2
GEORGIA											2	2
MAINE			1									1
MARYLAND	7										1	8
MICHIGAN		1			1							2
MISSISSIPPI	5			7	2				1		2	17
NEBRASKA	2											2
NEW HAMPSHIRE	3		1		3						1	8
NEW JERSEY	1											1
NEW MEXICO	15	1	6	2	1	3						28
NEW YORK - A											84	84
NEW YORK - BI											1	1
NORTH DAKOTA											1	1
OREGON	2		1	1							1	5
RHODE ISLAND	12	1		2	2						1	18
SOUTH CAROLINA	5		1	2					2			10
TEXAS											1	1
UTAH			1									1
VERMONT	1	1										2
WEST VIRGINIA	1		1									2
<b>TOTAL</b>	<b>86</b>	<b>10</b>	<b>20</b>	<b>16</b>	<b>14</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>111</b>	<b>269</b>

**B. NON-HUMAN SOURCES**

SOURCES	GROUP											TOTAL
	B	C	C1	C2	D	E	E1	E4	G	H	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT												
ANIMAL FEEDS		1	1								2	4
WILD ANIMALS AND BIRDS											2	2
REPTILES AND ENVIRONMENT												
HUMAN DIETARY ITEMS											1	1
MISCELLANEOUS	1		4			11						16
<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>11</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5</b>	<b>23</b>

# 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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Oklahoma	Stanley Ferguson, Ph.D.	William R. Schmieding, M.D.
Oregon	John A. Googins, M.D.	Gatlin R. Brandon, M.P.H.
Pennsylvania	W. D. Schrack, Jr., M.D.	James E. Prier, Ph.D.
Puerto Rico	Luis Mainardi, M.D.	Eduardo Angel, M.D.
Rhode Island	James R. Allen, M.D. (Acting)	Malcolm C. Hinchliffe, M.S.
South Carolina	Donald H. Robinson, M.D.	Arthur F. DiSalvo, M.D.
South Dakota	Robert H. Hayes, M.D.	B. E. Diamond, M.S.
Tennessee	Robert H. Hutcheson, Jr., M.D.	J. Howard Barrick, Dr.P.H.
Texas	M. S. Dickerson, M.D.	J. V. Irons, Sc.D.
Utah	Taira Fukushima, M.D.	Russell S. Fraser, M.S.
Vermont	Geoffrey Smith, M.D.	Dymitry Pomar, D.V.M.
Virginia	Karl A. Western, M.D.	Frank W. Lambert, Ph.D.
Washington	John Beare, M.D. (Acting)	Jack Allard, Ph.D.
West Virginia	N. H. Dyer, M.D.	J. Roy Monroe, Ph.D.
Wisconsin	H. Grant Skinner, M.D.	S. L. Inhorn, M.D.
Wyoming	Herman S. Parish, M.D.	Donald T. Lee, Dr.P.H.