REPORT NO. 109
SEPTEMBER 1971

CENTER FOR DISEASE CONTROL

SALMONELLA

SURVEILLANCE

CONTENTS. . .

FOR THE MONTH OF APRIL 1971

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
Attn: Salmonellosis Surveillance Activity, Epidemiology Program
Atlanta, Georgia 30333

September 2, 1971

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I. SUMMARY

In April 1971, 1499 isolations of salmonellae were reported from humans, an average of 375 isolations per week (Tables I, II, and V-A). This number represents a decrease of 4 (1.1 percent) from the weekly average of March 1971 and an increase of 29 (8.4 percent) over the weekly average of April 1970.

Reports of 730 nonhuman isolations of salmonellae were received during April 1971 (Tables II, IV, and V-B).

II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes during April:

	HUMAN				NONHUMAN		
	Serotype	Number	Percent	Rank Last Month	Serotype	Number	Percent
1	typhi-murium*	406	27.1	1	typhi-murium*	176	24.1
2	enteritidis	165	11.0	2	anatum	50	6.8
3	infantis	96	6.4	4	heidelberg	39	5.3
4	heidelberg	90	6.0	3	cholerae-suis var. kunzendorf	38	5.2
5	newport	60	4.0	6	saint-paul	35	4.8
6	blockley	49	3.3	8	blockley	30	4.1
7	saint-paul	47	3.1	5	senftenberg	30	4.1
8	java	45	3.0	>10	infantis	21	2.9
9	montevideo	41	2.7	>10	montevideo	21	2.9
10	typhi	39	2.6	10	san-diego	20	2.7
Total		1038	69.2		Total	460	63.0
TOTAL (all serotypes)		1499			TOTAL (all serotypes)	730	
*Includes var. copenhagen		33	2.2		*Includes var. copenhagen	28	3.8

III. CURRENT INVESTIGATIONS

None

IV. REPORTS FROM THE STATES

A. Salmonella chester in a Hospital Nursery

Reported by G. W. Prothro, M.D., and B. Conrad, M.D., Tulsa City-County Health Department; R. L. Carpenter, M.D., Commissioner of Health, S. W. Ferguson, Ph.D., State Epidemiologist, and P. M. Redstone, M.D., EIS Officer, Oklahoma State Health Department.

In January 1971, an outbreak of Salmonella chester occurred in the premature nursery of a metropolitan Oklahoma hospital. The source of the outbreak was traced to a mother who was having explosive diarrhea at the time of delivery on January 8. Cultures of her stools yielded S. chester. Her premature infant became ill with diarrhea 2 days later and died the following day from S. chester sepsis. Culture of 10 other infants in the premature nursery revealed five with positive stools; a prevalence rate of 55 percent. Four of these infants were ill with diarrhea, while one remained asymptomatic. Two family members of the index case and one of 20 children in the regular nursery whose stools were cultured also were positive for S. chester but were not ill. Sixty-four hospital personnel had worked in the delivery suite, obstetrics ward, or premature nursery at the time of the outbreak; two stool cultures from each of them failed to yield salmonellae.

Numerous personnel had contact with all of the infected premature infants. However, no personnel from the premature ward were known to have attended children in the regular nursery. The source of infection for the child in the regular nursery was not discovered.

The premature nursery was closed. Infants with positive cultures were isolated and treated with parenteral gentamicin. Deliveries were curtailed and physicians were asked to use two neighboring hospitals. The nursery was thoroughly disinfected, and knee-action controls were installed on all handwashing facilities. When enough hospital personnel had been proven culture negative, the nursery was re-opened. However, none of the original infants involved regardless of culture status, were moved back in. Periodic culture surveys in the nursery have been negative since it re-opened.

Editorial Comment: The mode of spread of the epidemic seems to have been cross-infection, most likely via the hands of hospital personnel. Lack of proper sterile technique and hand-washing facilities probably contributed to the spread of disease. The prompt control measures instituted brought an early end to the epidemic. Treatment with antibiotics has previously been shown to be associated with prolonged excretion of salmonella, and therefore, the actual contribution of gentamicin therapy towards controlling this outbreak is questionable. However, the propensity of premature infants for systemic illness means that such patients exhibiting clinical signs of infection may be candidates for antibiotic therapy for purposes of individual treatment rather than halting transmission.

V. SPECIAL REPORTS

A. Recent Articles on Salmonellosis

The following articles on salmonellosis have been published in recent months and should be of interest to public health workers.

1. Aaron E, Gross PA, Wehrle PF, Kogan BA, Heidbreder GA: Urban salmonellosis. Amer J Public Health 61:337, Feb 1971

2. Constant E, Green RL, Wagner DK: Salmonella osteomyelitis of both hands and the hand-foot syndrome. Arch Surg 102:148, Feb 1971

3. Hendricks CW: Increased recovery rate of salmonellae from stream bottom sediments versus surface waters. Appl Microbiol 21:379, Feb 1971

4. Neu HC, Winshell EB, Winter J, Cherubin CE: Antibiotic resistance of salmonella in northeastern United States 1968-1969. N Y State J Med 71:1196, Jun 1971

5. Pocurull DW, Gaines SA, Mercer HD: Survey of infectious multiple drug resistance among salmonella isolated from animals in the United States. Appl Microbiol 21:358, Feb 1971

6. Walker JH: Typhoid and paratyphoid immunization. The Practioner 206:478, Apr 1971

7. Wells JG, Morris GK, Brachman PS: New method of isolating salmonellae from milk. Appl Microbiol 21:235, Feb 1971

8. A Waterborne Epidemic of Salmonellosis in Riverside, California, 1965: Epidemiologic Aspects. A Collaborative Report. Amer J Epidem 93:33, Jan 1971

9. Boring JR III, Martin WT, Elliott LM: Isolation of Salmonella typhi-murium from municipal water, Riverside, California, 1965. Amer J Epidem 93:49, Jan 1971

B. Summary of Salmonellosis Outbreaks Reported in the Salmonella Surveillance Reports, 1963 - 1970

During the 8-year period, 1963-1970, 287 outbreaks of salmonellosis involving 24,018 individuals were reported in the Salmonella Surveillance Reports. Outbreaks which occurred in the home accounted for the greatest number of outbreaks (95), but the fewest cases (890) of any of the commonly reported locations (table 1). In contrast, the 48 salmonellosis outbreaks traced to banquet meals accounted for 10,331 cases. Other frequently reported locations of outbreaks included hospitals and other institutions (64), restaurants and food stores (40), and schools (14).

Eggs and egg products (43 outbreaks) and turkey (40 outbreaks) were the most commonly incriminated vehicles of infection in the 217 foodborne outbreaks (table 2). Beef (13 outbreaks), pork (12 outbreaks), chicken (11 outbreaks), and milk (7 outbreaks) were the other food vehicles frequently identified.

Sixty-four outbreaks involving 3,860 individuals were reported in hospitals, nursing homes, and mental institutions. Data on these outbreaks for each year since 1963 are summarized in table 3. Outbreaks which occurred in adult hospital wards and mental institutions accounted for the greatest number of cases (1,521 and 1,510, respectively). However, outbreaks in nursing homes and chronic disease hospitals resulted in the highest case fatality ratio (10.3 percent) as shown in table 4. Cross-infection was thought to be the mode of spread in 32 of the 64 institutional outbreaks (table 5). A common vehicle, such as contaminated food or medication, was incriminated in 21 outbreaks; the mode of spread was not identified in 11 outbreaks.

Table 1

Locations of Salmonellosis Outbreaks 1963-1970

Location	Number of Outbreaks	Number of Cases	Cases / Outbreak
Home	95	890	9
Hospital, nursing home, institution	64	3,860	60
Banquet	48	10,331	215
Restaurant, food store	40	3,303	83
School	14	3,352	239
Other	26	2,282	88
TOTAL	287	24,018	84

Table 2

Foodborne Salmonellosis Outbreaks 1963-1970

Vehicles of Infection

Vehicle	Number of Outbreaks	Number of Cases	Cases / Outbreak
Eggs and egg products	43	4,630	108
Turkey	40	6,769	169
Chicken	11	641	58
Beef	13	1,442	111
Pork	12	1,103	92
Milk - raw	5	56	11
- powdered	2	39	20
Other	45	4,634	103
Unidentified	46	3,889	85
TOTAL	217	23,203	107

Table 3

Outbreaks of Hospital and Institutional Salmonellosis, 1963-1970

Year	No. Outbreaks	No. Ill	Range	Average No. Ill	No. Deaths	Case Fatality Ratio (%)
1963	11	962	2 - 840	87.4	18	1.9
1964	10	479	6 - 121	47.9	4	0.8
1965	4	61	4 - 27	15.3	1	1.6
1966	8	1,307	4 -1000	163.4	7	0.5
1967	7	216	7 - 104	30.9	13	6.0
1968	4	65	8 - 23	16.2	1	1.5
1969	6	137	7 - 87	22.8	0	0.0
1970	14	633	0*- 200	45.2	43	6.8
TOTAL	64	3,860	0*-1000	60.3	87	2.3

*one asymptomatic nursery outbreak

Table 4

Locations of Salmonellosis Outbreaks in Hospitals and Institutions, 1963-1970

Location	No. Outbreaks	No. Ill	Average No. Ill	No. Deaths	Case Fatality Ratio (%)
Pediatric ward	13	257	19.8	11	4.3
Newborn nursery	15	153	10.2	4	2.6
General hospital adult wards	14	1,521	108.6	22	1.4
Nursing home, chronic disease hospital	13	419	32.2	43	10.3
Mental institution	9	1,510	167.8	7	0.5
TOTAL	64	3,860	60.3	87	2.3

Table 5

Mode of Spread in Hospital and Institutional Salmonellosis Outbreaks, 1963-1970

Mode	No. Outbreaks	No. Ill	Average No. Ill	No. Deaths	Case Fatality Ratio (%)
Cross-infection	32	568	17.8	29	5.1
Common vehicle	21	2,983	142.0	57	1.9
Unidentified	11	309	28.1	1	0.3
TOTAL	64	3,860	60.3	87	2.3

C. Announcement: Course describing methods of isolating salmonellae from food products and animal feeds.

The Epidemiology Program and the Laboratory Division of the Center for Disease Control will conduct a 2-week course, January 3 - 14, 1972, describing methods of isolating salmonellae from food products and animal feeds. The prerequisite is 6 months experience in a bacteriology or quality control laboratory. The course will be divided equally between lectures and laboratory exercises.

Lecture topics will include epidemiology, sampling, and principles of isolation and identification. The laboratory exercises will provide actual experience in isolating and identifying biologically and serologically the salmonellae from foods and feeds. The products to be analyzed will include eggs, dried milk, candy, red meats, poultry, animal by-products, and fish meal.

State, Federal, and industry personnel may obtain application forms from:

Laboratory Training Section
Laboratory Division
Center for Disease Control
Atlanta, Georgia 30333

There will be no charge for the course, but enrollment is limited to 20 students.

VI. INTERNATIONAL

A. Possible Airborne transmission of *S. abony* in a Hospital Ward

Reported by Dr. Marijan Stankovic, Chief, Department of Communicable Diseases, Medicinski Centar Zenica: and Dr. V. Barac, Dr. D. Rkman, and Dr. D. Lupi, physicians of the same department.

On January 7, 1970, a 14-month-old girl was admitted to the Department of Pediatrics of the Medical Center in Zenica, Yugoslavia, with a history of diarrhea, vomiting, and fever; *Salmonella abony* was subsequently cultured from her stool, urine and sputum. She was transferred to the Infectious Disease Ward on January 30, and during the ensuing 5-month period, six separate sputum specimens yielded *S. abony*.

On January 10, 1970, a 6-month-old boy was admitted to the pediatric ward and transferred to the infectious disease ward on February 17, because of measles and salmonellosis. During his hospital course, *S. abony* was isolated 13 times from his stool, 15 times from his throat and once after coughing on an agar plate. During the 3 months, January through March, there were 39 cases of *S. abony* on the infectious disease ward, 61 cases on the pediatric ward, and an additional 25 cases in people outside the hospital who had contact with patients discharged from the hospital.

Sputums were cultured from 70 of the hospitalized children, and 9 children were found to be excreting salmonella in their sputum. Twelve of 30 were found to be excreting *S. abony* in their urine, and one of 20 had a positive blood culture. The illnesses varied from mild to severe, with 5 deaths occurring from bronchopneumonia. Because autopsies could not be performed, the organisms responsible for the bronchopneumonia were not determined.

Water for the entire hospital is supplied by the same municipal source that supplies the city of Zenica. The absence of non-hospital-related *S. abony* cases in the community served to eliminate water as a possible vehicle of infection.

The infectious disease ward and the pediatric ward had separate kitchens, and although the pediatric ward supplied fresh and powdered milk for infants in the entire hospital, no isolations of *S. abony* occurred outside the two wards. None of the kitchen staff were ill, and cultures of the food and water were negative for *S. abony*.

In an attempt to control the outbreak, both pediatric and infectious disease wards emphasized hand washing, disinfection, bacteriological examination of the personnel and environment, and inspection of food preparation methods. One maid became ill in April with fever and diarrhea, and *S. abony* was isolated; there were no isolations from other personnel. When the initial control measures failed, the infectious disease ward placed the culture-positive patients in separate rooms and did not allow newly admitted children to be placed in these rooms. Although cases continued to occur on the pediatric ward, the epidemic curve (Figure 1) shows that the outbreak was essentially stopped on the infectious disease ward by this measure, the two cases occurring in early June were in adults with typhoid fever who were placed in a room for one night with a child excreting *S. abony*.

Because over 75 percent of the ill children were under 2 years of age, possibilities for direct contact between infants were minimal. The authors report that the children most likely to get salmonellosis were those in a room with *S. abony* infected patients who had abundant catarrhal secretions, paroxysmal cough, or were in rooms with a small amount of air per person (see Table 6).

Figure 1

CASES OF SALMONELLOSIS, BY DATE OF ONSET, MEDICAL CENTER, ZENICA, YUGOSLAVIA, 1970

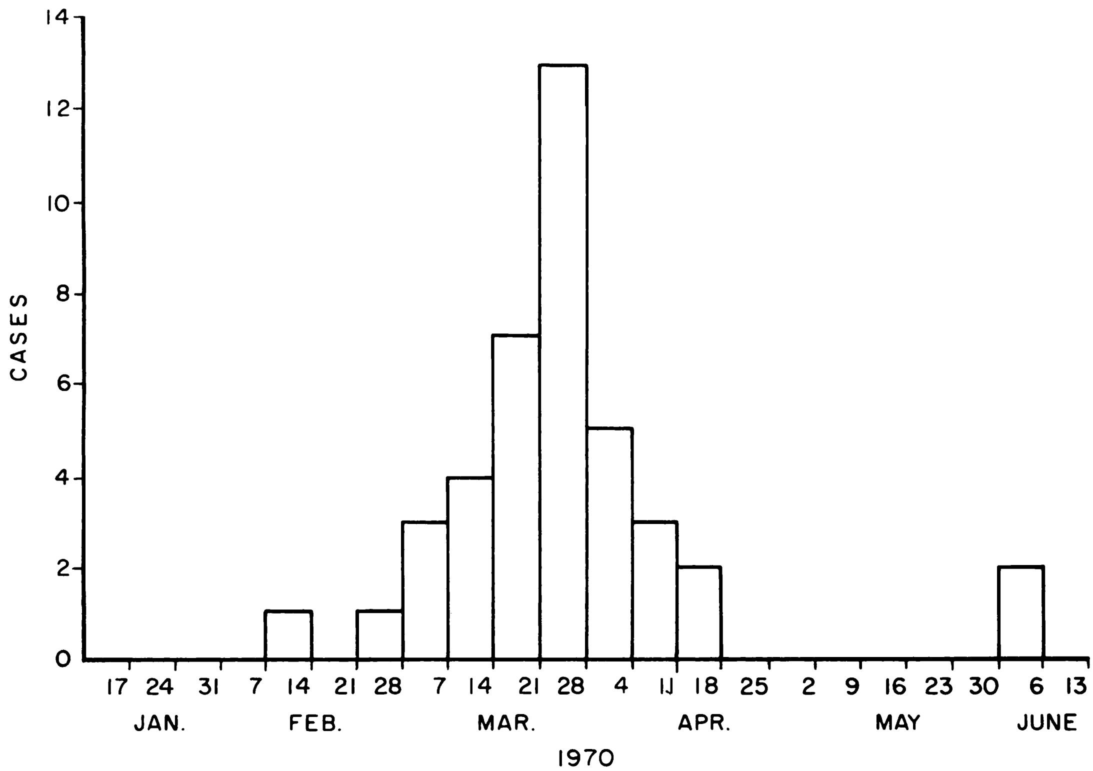

Table 6

Attack Rates per Room

Department	Cubic Meters per Room	Patients per Room	Patients with Cultures Yielding S. abony	Attack Rate
Department of Pediatrics	108	11	2	18.1
	54	8	5	62.5
	54	8	5	62.5
Dept. of Inf. Dis. (pertussis)	108	7	7	100.0

Editorial Comment: Contact spread from an ill child to staff and back to another child cannot be completely ruled out. However, airborne transmission is suggested by the isolation of *S. abony* from the throats of a number of children on different occasions, the higher attack rates among children in crowded rooms, and the termination of the outbreak by segregating ill children in one room without instituting cohort nursing.

B. Salmonellosis in Australia - 1970

Reported by Suzanne F. Dixon, Salmonella Reference Laboratory, Adelaide, South Australia.

During 1970,a total of 9370 isolates were serotyped under the direction of Dr. K. F. Anderson, at the Salmonella Reference Laboratory, Institute of Medical and Veterinary Science, Adelaide. Of these,8844 (972 human, 7872 non-human) were of Australian origin, the remaining 526 (369 human, 157 non-human) were received from Tonga, Malaysia, Republic of Philippines, the Territory of Papua, and New Guinea. Of the 289 human isolates received from Tonga (62) and the Philippines (227), 177 were strains of *Salmonella typhi*. One new serotype, *Salmonella beaudesert* (ovine), was characterized.

The ten most frequently isolated serotypes in Australia are listed in the table below.

HUMAN			NONHUMAN		
Serotype	Number	Percent	Serotype	Number	Percent
typhi-murium	370	38.1	typhi-murium	2531	32.1
bovis-morbificans	81	8.3	anatum	883	11.2
chester	55	5.7	derby	869	11.0
newport	46	4.7	adelaide	669	8.5
anatum	45	4.6	havana	646	8.2
havana	34	3.5	bovis-morbificans	466	5.9
derby	29	2.9	kottbus	253	3.2
adelaide	28	2.9	singapore	240	3.0
muenchen	26	2.7	senftenberg	195	2.5
senftenberg	16	1.6	oranienburg	171	2.2
			chester	171	2.2
Totals	730	75.0		7094	90.0

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, APRIL, 1971

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
anatum				1		2			1	1	2			1	2		1														1	
bareilly																																
blockley				3				4	2		6	4		3	1	1	1	3	1						3		1				3	
braenderup								2		1						1																
bredeney											2			1	1												1					
chester				1						1							1															
cholerae-suis v kun																													1			
cubana				1							1	6		2			1						4								3	1
derby								1			4	1			1	1		1					1		3		1				1	
enteritidis	1			12		3		17	10	1	26	5	3	20	3	5	2		4					1	7	1	1		2		4	6
give												1																				
heidelberg				4		1	1	1	2	2	8	5	1	10	5	1			5				4		2		2				3	
indiana										1															1		2		1		1	
infantis				6	1	3		5	2		2	1	1	1	4	3	2		1	1			2		4		1		8		1	2
java						1		3	1	3	2			1		1	2	1							1							2
javiana																			1													
litchfield														2	6				1						1						1	
livingstone																																
manhattan				1				1	1	1	2	5		4		1			1													
miami																									2							2
mississippi																															2	
montevideo				1		1					19			2										1	4		5					
muenchen				1		1	1	1	1			2			1	1	1										1					1
newington																			1					1								
newport						3	1	2	3	1	3	4		2	2	2	1	1		2			4	1	1		2		4			1
oranienburg						1		1			1			1		1							1		1						2	1
panama														1					1													
paratyphi B				1								1			2												1				1	
reading				1		4					8																1					
saint-paul				4		3		1	2	1	2	2		4		4	3							1	2						2	
san-diego								1									1															
schwarzengrund										1																						
senftenberg											3										1		1		2							
tennessee											1			2	1												1					
thompson				2				1		1	1	1		3	2	3									1		2		1		4	
typhi				1			2	1		1	2			3	1				2										1		1	2
typhimurium	1			18	2	8		10	20	12	33	8	12	23	13	17	5		4	5	1		10	1	15		4	2	6		13	4
typhimurium v cop	1			2		13				1					8																	
weltevreden																																
worthington					1						2	1	1																		1	
TOTAL	3	—	—	60	4	44	5	52	45	29	130	47	18	86	53	42	21	6	22	8	2	—	27	6	50	1	26	2	24	—	44	22
ALL OTHER*	—	3	—	2	3	1	20	—	1	1	7	2	—	7	8	4	1	—	2	—	—	—	—	—	1	15	5	—	—	—	3	3
TOTAL	3	3	—	62	7	45	25	52	46	30	137	49	18	93	61	46	22	6	24	8	2	—	27	6	51	16	31	2	24	—	47	25

Note: NYA — New York, Albany; NYB — Beth Israel Hospital; NYC — New York City.
Beth Israel Hospital laboratory is a reference laboratory and this month serotyped a total of 72 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																5		1	19	1.3	78	1.1	*anatum*
																					—	—	12	0.2	*bareilly*
1	1			1										1				9			49	3.3	188	2.7	*blockley*
	2																				6	0.4	36	0.5	*braenderup*
											1							4		1	11	0.7	54	0.8	*bredeney*
																					3	0.2	27	0.4	*chester*
	1																				2	0.1	8	0.1	*cholerae-suis v kun*
					4	1					1										25	1.7	165	2.4	*cubana*
1							2											4		2	24	1.6	136	2.0	*derby*
2	3		1		1		7		2		3					3	1	5		3	165	11.0	645	9.4	*enteritidis*
							1														2	0.1	19	0.3	*give*
		1			2	1	7	1			1		4			2		13		1	90	6.0	408	5.9	*heidelberg*
																					6	0.4	29	0.4	*indiana*
1	3			1	7	1	2		7				1			1	2	18		1	96	6.4	352	5.1	*infantis*
1																	1	24		1	45	3.0	187	2.7	*java*
							3											1			5	0.3	69	1.0	*javiana*
											2										13	0.9	54	0.8	*litchfield*
							1											2			3	0.2	18	0.3	*livingstone*
	1																	5			23	1.5	130	1.9	*manhattan*
																					4	0.3	16	0.2	*miami*
																					2	0.1	6	0.1	*mississippi*
					1		2				2							3			41	2.7	135	2.0	*montevideo*
		3			2													1			18	1.2	80	1.2	*muenchen*
																					2	0.1	13	0.2	*newington*
		1			3		1										3	10		2	60	4.0	329	4.8	*newport*
		1					3		1					1				3			19	1.3	99	1.4	*oranienburg*
						1	3				1					2		2		2	13	0.9	43	0.6	*panama*
							1											3			10	0.7	66	1.0	*paratyphi B*
																2	6	1			23	1.5	75	1.1	*reading*
1	1				2		3				1					4		4			47	3.1	304	4.4	*saint-paul*
					1												2	2			7	0.5	65	0.9	*san-diego*
	1																				2	0.1	22	0.3	*schwarzengrund*
1				1			1				2							3		2	17	1.1	73	1.1	*senftenberg*
	1																	1			7	0.5	19	0.3	*tennessee*
1	2	7																5		1	38	2.5	194	2.8	*thompson*
	2	1		1	2		6						1					9			39	2.6	173	2.5	*typhi*
3	3	12		6	7	1	17				13		5			4	4	48		3	373	24.9	1693	24.6	*typhimurium*
1				1	5												1				33	2.2	120	1.7	*typhimurium v cop*
																1				10	11	0.7	40	0.6	*weltevreden*
																		3			9	0.6	22	0.3	*worthington*
13	21	27	1	11	37	5	60	1	10	—	27	—	11	2	—	19	20	188	—	30	1362	90.9	6202	89.9	TOTAL
—	2	—	4	5	2	—	15	—	—	—	—	8	1	—	—	—	—	9	2	—	137		694		ALL OTHER*
13	23	27	5	16	39	5	75	1	10	–	27	8	12	2	–	19	20	197	2	30	1499		6896		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, APRIL, 1971

SEROTYPE	REPORTING CENTER																						
	ALK	ARI	ARK	CAL	CON	DC	FLA	GA	ILL	LA	MD	MAS	MIC	MIN	MIS	MO	NH	NJ	NM	NYA	NYC	OHI	PA
adelaide													1										
agona				1																			
alachua																							1
atlanta								1															
berta		1	2	1						1													1
bovis-morbificans									1														
california									1				2										
cerro																							
eastbourne				1																			
gallinarum																							3
gaminara																1							
habana					1																		
hartford								1															
kentucky				2																			
kottbus									1														2
lindenburg																							
lomita																							
london									1				1										
minnesota														1				1					
muenster																							
norwich											1												
ohio																							
orion																							
oslo																							
poona				1			3						1									2	
saphra																							
siegburg												2									1		
urbana				1					1														
virchow													2										
TOTAL	–	1	2	7	1	–	3	2	5	1	1	2	7	1	–	1	–	1	–	–	1	2	7
NOT TYPED*	2	–	3	2	–	15	–	1	2	1	–	–	1	–	4	1	3	–	8	20	–	–	–
TOTAL	2	1	5	9	1	15	3	3	7	2	1	2	8	1	4	2	3	1	8	20	1	2	7

* See Table V-A

TABLE II – Continued

REPORTING CENTER: RI	TEN	TEX	VA	WIS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
					1	1	*adelaide*
					1	2	*agona*
					1	2	*alachua*
					1	5	*atlanta*
1		1	1		9	17	*berta*
					1	3	*bovis-morbificans*
					3	5	*california*
				1	1	5	*cerro*
					1	4	*eastbourne*
					3	4	*gallinarum*
					1	4	*gaminara*
					1	2	*habana*
					1	3	*hartford*
			3	1	6	15	*kentucky*
					3	25	*kottbus*
			1		1	1	*lindenburg*
		1			1	5	*lomita*
					2	8	*london*
					2	12	*minnesota*
	1			1	2	11	*muenster*
					1	2	*norwich*
		1			1	7	*ohio*
				1	1	1	*orion*
	1				1	12	*oslo*
		1			8	31	*poona*
		1			1	5	*saphra*
					3	18	*siegburg*
		1			3	21	*urbana*
					2	2	*virchow*
1	2	6	5	4	63	331	TOTAL
2	–	9	–	–	74	363	NOT TYPED*
3	**2**	**15**	**5**	**4**	**137**	**694**	**TOTAL**

Cumulative Totals include isolations of all serotypes (except those listed in Table I) reported this year.

TABLE III. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES, APRIL, 1971

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum	5	2	1		2	1	11	18			18
bareilly							—	8			8
blockley	16						16				—
braenderup							—				—
bredeney							—	3			3
chester		2					2				—
cholerae-suis v kun	1		36	1			38				—
cubana							—	7			7
derby	1	1	2				4	4			4
enteritidis	1			1		2	4				—
give							—				—
heidelberg	12	21	1	1			35	1			1
indiana	1						1				—
infantis	13	3				1	17			1	1
java						1	1	1			1
javiana		1					1				—
litchfield							—				—
livingstone							—				—
manhattan			1				1			8	8
miami							—				—
mississippi							—				—
montevideo	8	1					9	5			5
muenchen	1					1	2				—
newington							—	10			10
newport			2	6	2	1	11				—
oranienburg		4					4			1	1
panama							—				—
paratyphi B							—				—
reading	1	9					10				—
saint-paul	1	17	3	3		1	25	1			1
san-diego	1	16	1	1			19				—
schwarzengrund	1	2					3				—
senftenberg	11	11	1				23	6			6
tennessee	2	4			1		7	2			2
thompson	7	3		1		1	12				—
typhi							—				—
typhimurium	28	15	10	49	5	6	113			4	4
typhimurium v cop	17	3	1	3		1	25				—
weltevreden							—				—
worthington	9	1		1			11	1			1
TOTAL	137	116	59	67	10	16	405	67	—	14	81
ALL OTHER*	20	31	3	3	2	5	64	17	—	5	22
TOTAL	**157**	**147**	**62**	**70**	**12**	**21**	**469**	**84**	**—**	**19**	**103**

* See Table IV

TABLE III – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON-MENT	HUMAN DIETARY ITEMS: EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL	MISCEL-LA-NEOUS	TOTAL	CUMU-LATIVE TOTAL	SEROTYPE
		5				16	21		50	134	*anatum*
	3						–		11	13	*bareilly*
	1	10				3	13		30	69	*blockley*
	2						–		2	12	*braenderup*
							–		3	36	*bredeney*
							–		2	8	*chester*
							–		38	104	*cholerae-suis v kun*
						1	1		8	43	*cubana*
							–	1	9	39	*derby*
							–		4	31	*enteritidis*
							–		–	7	*give*
1							–	2	39	193	*heidelberg*
							–		1	6	*indiana*
1		1		1			2		21	106	*infantis*
1	5					1	1		9	32	*java*
							–		1	6	*javiana*
	2						–		2	8	*litchfield*
							–		–	4	*livingstone*
							–	1	10	33	*manhattan*
							–		–	–	*miami*
							–		–	–	*mississippi*
						7	7		21	95	*montevideo*
1							–		3	17	*muenchen*
							–		10	31	*newington*
	3				2	1	3	1	18	72	*newport*
							–	1	6	43	*oranienburg*
	2						–		2	5	*panama*
	1					1	1		2	4	*paratyphi B*
							–		10	139	*reading*
4	1					4	4		35	148	*saint-paul*
1							–		20	77	*san-diego*
						3	3		6	42	*schwarzengrund*
							–	1	30	88	*senftenberg*
							–		9	45	*tennessee*
	7						–		19	76	*thompson*
							–		–	8	*typhi*
20		6			5		11		148	457	*typhimurium*
							–	3	28	76	*typhimurium v cop*
							–		–	–	*weltevreden*
							–		12	60	*worthington*
29	27	22	–	1	7	37	67	10	619	2367	TOTAL
1	11	–	–	–	–	9	9	4	111	428	ALL OTHER*
30	**38**	**22**	**–**	**1**	**7**	**46**	**76**	**14**	**730**	**2795**	**TOTAL**

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, APRIL, 1971

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
adelaide							—				—
agona	2	4					6				—
alachua	2						2				—
albany							—				—
amager	1						1				—
bere							—	2			2
binza	1	1			1		3	1			1
bovis-morbificans							—				—
cerro	1	1					2				—
drypool		4					4			1	1
dublin				3		1	4				—
eimsbuettel						2	2	1		1	2
godesberg							—			1	1
habana		1					1				—
illinois							—	1			1
kentucky		1			1		2	1			1
kottbus						1	1				—
lexington							—				—
lille		4					4				—
meleagridis		9	1				10				—
minnesota			1				1				—
mission							—			1	1
muenster							—	3			3
onderstepoort							—				—
orion							—				—
poona						1	1				—
pullorum	3						3				—
siegburg	1	1					2	1			1
stanley							—				—
taksony							—	1			1
thomasville	1	1					2			1	1
urbana							—				—
TOTAL	12	27	2	3	2	5	51	11	—	5	16
NOT TYPED*	8	4	1	—	—	—	13	6	—	—	6
TOTAL	20	31	3	3	2	5	64	17	—	5	22

*See Table V-B

TABLE IV – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS: EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL	MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
	1						–		1	1	*adelaide*
							–		6	15	*agona*
							–		2	10	*alachua*
							–	2	2	8	*albany*
							–		1	6	*amager*
							–		2	2	*bere*
							–		4	13	*binza*
						1	1		1	1	*bovis-morbificans*
						1	1		3	20	*cerro*
							–	1	6	14	*drypool*
							–		4	15	*dublin*
						1	1		5	30	*eimsbuettel*
							–		1	1	*godesberg*
							–		1	12	*habana*
							–		1	2	*illinois*
							–		3	15	*kentucky*
							–		1	3	*kottbus*
						4	4		4	5	*lexington*
							–		4	4	*lille*
							–		10	19	*meleagridis*
							–		1	3	*minnesota*
							–		1	1	*mission*
							–		3	4	*muenster*
1							–		1	1	*onderstepoort*
							–	1	1	4	*orion*
							–		1	4	*poona*
							–		3	5	*pullorum*
						2	2		5	32	*siegburg*
	3						–		3	3	*stanley*
							–		1	6	*taksony*
							–		3	18	*thomasville*
	4						–		4	11	*urbana*
1	8	–	–	–	–	9	9	4	89	364	TOTAL
–	3	–	–	–	–	–	–	–	22	64	NOT TYPED*
1	11	–	–	–	–	9	9	4	111	428	TOTAL

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, APRIL, 1971

A. HUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	B	C	C1		C2	D	E		G	I	UNK				
ALASKA	2														2
ARKANSAS	1				1	1									3
CALIFORNIA	1						1								2
DISTRICT OF COLUMBIA	5				2	5					3				15
GEORGIA	1														1
ILLINOIS	2														2
LOUISIANA											1				1
MICHIGAN	1														1
MISSISSIPPI	2	1			1										4
MISSOURI										1					1
NEW HAMPSHIRE	1					1					1				3
NEW MEXICO	4		1		1	1			1						8
NEW YORK – A											20				20
RHODE ISLAND		1							1						2
TEXAS	4		2				1				2				9
TOTAL	24	2	3		5	8	2		2	1	27				74

B. NONHUMAN SOURCES

SOURCES	GROUP														TOTAL
	B	C	C1		C2	D	E		G	I	UNK				
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	3		3				1				6				13
ANIMAL FEEDS			6												6
WILD ANIMALS AND BIRDS															–
REPTILES AND ENVIRONMENT	2										1				3
HUMAN DIETARY ITEMS															–
MISCELLANEOUS															–
TOTAL	5	–	9		–	–	1		–	–	7				22

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Key to all disease surveillance activities are the physicians who serve as State epidemiologists. They are responsible for collecting, interpreting, and transmitting data and epidemiological 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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