REPORT NO. 97
June 23, 1970

NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS. . .

FOR THE MONTH OF APRIL 1970

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

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I. SUMMARY

In April 1970, 1,730 isolations of salmonellae were reported from humans, an average of 346 isolations per week (Tables I, II, and V-A). This number represents an increase of 12 (3.6 percent) over the weekly average of March 1970 and an increase of 25 (7.8 percent) over the weekly average of April 1969.

Reports of 960 nonhuman isolations of salmonellae were received during April 1970 (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*	485	28.0	1	typhi-murium*	149	15.5
2	heidelberg	126	7.3	2	heidelberg	84	8.8
3	enteritidis	125	7.2	4	saint-paul	68	7.1
4	infantis	107	6.2	3	infantis	48	5.0
5	thompson	101	5.8	8	montevideo	43	4.5
6	newport	98	5.7	5	eimsbuettel	42	4.4
7	blockley	71	4.1	6	cholerae-suis var. kunzendorf	40	4.2
8	saint-paul	64	3.7	7	worthington	36	3.8
9	typhi	37	2.1	9	senftenberg	33	3.4
10	derby	33	1.9	>10	minnesota	27	2.8
	Total	1247	72.1		Total	570	59.4
	TOTAL (all serotypes)	1730			TOTAL (all serotypes)	960	
	*Includes var. copenhagen	14	0.8		*Includes var. copenhagen	33	3.4

III. CURRENT INVESTIGATIONS

Salmonellosis in a Nursing Home - Michigan

Reported by Otto Engelke, M.D., Health Officer, Washtenaw County Board of Health; Donald Coohon, D.V.M., State Public Health Veterinarian, and Kenneth Wilcox, Jr., M.D., Director, Bureau of Laboratories, Michigan Department of Public Health; and Barry S. Stoler, M.D., EIS Medical Epidemiologist, Epidemiology Program, NCDC.

Between February and early April 1970, 54 cases of a diarrheal illness occurred in the 212 residents of a nursing and convalescent home in southeastern Michigan. Salmonella typhi-murium with the same antibiogram was isolated from stool cultures of 23 patients. The epidemic curve is illustrated in Figure 1. There were 5 deaths. Four were considered to have been directly related to the diarrheal illness; the fifth probably was related.

The nursing home is divided into two sections; a self-care unit, with approximately 160 patients and a nursing-care unit with approximately 50 patients. The cases occurred throughout all sections of the home with no apparent clustering.

During the outbreak, 10 of 36 employees in the kitchen gave a history of at least 1 day of diarrhea. None of the kitchen helpers were cultured at the time of their illness. Subsequent cultures of all 36, however, revealed 6 who were positive for the same bacteria; one had had diarrhea previously and five were asymptomatic.

One nurses aid developed febrile gastroenteritis during the outbreak and her stool was positive for Salmonella typhi-murium. Eight of 42 asymptomatic nursing personnel were found to be positive when cultured.

No common source could be found for the outbreak. Food is prepared in a central kitchen and served in the main dining room to all ambulatory patients. Those not able to come to the dining room have their food brought to them. Many of the kitchen employees eat one or more of the same meals as patients each day.

The water supply to the home is the same as that supplied to the city in which the home is located.

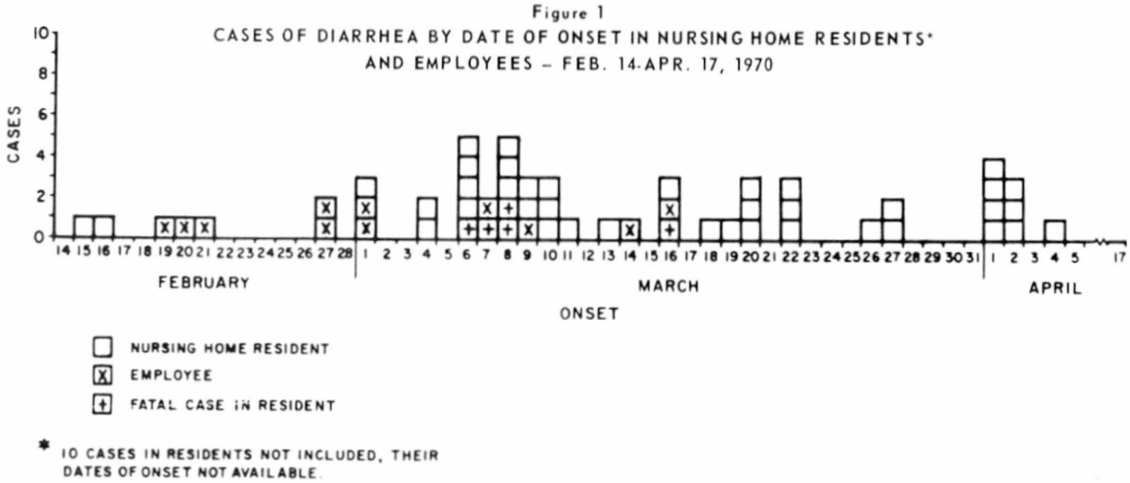
The physical facilities were found to be in relatively good condition with the exception of several nonfunctioning wall-mounted bedpan hoppers on the second and third floors of the nursing home. A scarcity of handwashing facilities was also noted.

A number of measures were instituted to control the epidemic. Kitchen employees and nurses with positive stool cultures were temporarily removed from work but were not treated with antibiotics. Careful enteric isolation procedures were instituted on any patient with a diarrheal illness, with follow-up stool cultures on any positive cases until at least three consecutive stools were found to be negative. The need for adequate handwashing before and after contact with patients was emphasized. It was suggested that new handwashing facilities be added and that existing facilities be modernized. It was also suggested that soiled linens be stored in plastic bags prior to transfer to the laundry.

EDITOR'S COMMENT: Although no common source could be incriminated in the investigation of this outbreak, it is likely that a significant number of patients were infected through person-to-person transmission. Transmission may have been facilitated by deficient isolation practices for ill patients, poor handling of soiled linen and bedpans from patients with diarrhea, and inadequate handwashing practices. The five deaths illustrate the potential seriousness of a salmonella outbreak in an institution caring for elderly and debilitated patients.

Figure 1

CASES OF DIARRHEA BY DATE OF ONSET IN NURSING HOME RESIDENTS* AND EMPLOYEES - FEB. 14-APR. 17, 1970



* 10 CASES IN RESIDENTS NOT INCLUDED, THEIR DATES OF ONSET NOT AVAILABLE.

IV. REPORTS FROM THE STATES

A. Salmonellosis Due to Commercially Prepared Beef Jerky - California

Reported by Ichiro Kamei, M.D., Chief, G. A. Heidbreder, M.D., M.P.H., Health Officer, Mr. Robert Murray, Epidemiologist, Acute Communicable Disease Control Division, Mr. Ralph Tetreault, Chief Sanitarian, Food and Drug Section, and Harvey Matlof, M.D., EIS Officer, Acute Communicable Disease Control Division, County of Los Angeles Health Department.

On February 10, 1970, three school children and their teacher shared a snack consisting of beef jerky obtained from a market near their school in East Los Angeles. Within 24 hours, the teacher and two of the students became ill with diarrhea and fever. Fecal cultures from all three yielded Salmonella infantis. Left-over beef jerky was also positive for that serotype.

The only common food eaten by these three persons was beef jerky; accordingly the processing establishment was visited on March 3. The beef jerky was prepared by placing chunks of raw beef in a large drying oven. Although the recommended peak temperature in the drying oven was 200°F, measurements revealed that a peak temperature of only 130°F was achieved. The finished product was paper wrapped in bulk quantities and distributed to wholesalers and markets.

Multiple environmental cultures were obtained from the processing plant on March 3. Specimens from the oven drying racks, the finished product bin, and from recently processed beef jerky were all positive for S. infantis. Cultures from the surface layers of spice from a large container were also found positive for S. infantis; cultures from samples of spice taken from beneath the surface were negative. Cultures of four employees were positive for S. infantis. Two of these persons were directly involved in the preparation of beef jerky; the other two were office employees who frequently ate the finished product on the plant premises.

Special surveillance of all reported Salmonella infantis isolations from Los Angeles County revealed that a total of 42 cases of S. infantis were reported between February 7 and March 28, 1970. It is noteworthy that the 5-year average for S. infantis isolations in Los Angeles County is 33 cases per year. Thus 42 cases contrasted with an expected five or six isolations for the same 2 month period. District health office personnel contacted 28 of these persons and inquired about beef jerky ingestion;

eighteen had consumed beef jerky during an appropriate incubation period. Two additional patients were household contacts of persons who had eaten the product. In 13 of these cases, the brand of beef jerky under investigation had been consumed. Five persons could not identify the brand of beef jerky.

On March 5, a county-wide recall of beef jerky from this plant was instituted. The plant was shut down and a new drying oven which achieved a peak temperature of 200°F for at least one and a half hours was installed. In addition, the entire plant was disinfected and known salmonella excreters were temporarily removed from work. After all these measures were taken, all environmental cultures were negative for salmonellae, and the plant was reopened on March 23.

EDITOR'S COMMENT: This is the third outbreak due to beef jerky reported in the Salmonella Surveillance Report and illustrates again the dangers involved in the consumption of meat products which are not re-cooked by the consumer. The original source of the salmonella contamination in the plant was not determined and could theoretically have originated with the beef, a human carrier, or less likely the spice (type unknown). The investigation of this outbreak illustrates well how prompt, careful epidemiological investigations of even small numbers of cases can lead to important findings.

B. Recent Salmonellosis Outbreaks Associated with Household Pets - Washington, Wisconsin, and Ohio

Reported by Herb W. Anderson, B.S., R.S., Environmental Epidemiologist, and Donald R. Peterson, M.D., Director, Division of Epidemiology, Seattle-King County Department of Public Health; Paul J. Pace, M.S., Chief Bacteriologist, Bureau of Laboratories, and E. R. Krumbiegel, M.D., Commissioner of Health, City of Milwaukee Health Department; and Taylor R. Kramer, B.S., Communicable Disease Investigator, John H. Ackerman, M.D., Chief, Division of Communicable Diseases, and Jack H. Russell, D.V.M., Public Health Veterinarian, Ohio Department of Health.

The following four outbreaks of salmonellosis were traced to household pets. An outbreak due to infected dogs, and one due to an infected parakeet were investigated by the Seattle-King County Department of Public Health. The City of Milwaukee Health Department and the Ohio Department of Health reported outbreaks traced to infected turtles.

1. A 73-year-old Seattle, Washington, grandmother died from a Salmonella thompson infection traced to two household dogs. On January 19, 1970, the grandmother experienced vomiting, severe abdominal cramps, and diarrhea. She associated these symptoms with a double dose of laxative taken upon retiring for the night. However, 4 days later, she was admitted to a hospital with severe diarrhea, low blood pressure and severe electrolyte depletion. Within 24 hours, she went into irreversible shock and died. S. thompson was isolated from both stool and blood specimens. Three months prior to her death, the widowed grandmother moved into a new home with her son-in-law's family where she enjoyed the company of three grandchildren and two dogs. During this period, there was no illness among any family members nor any apparent signs of disease in the dogs. However, a few days before the grandmother's illness, she had cleaned a floor soiled with dog feces. She was known to be careless about handwashing and had a habit of wiping her mouth with her hand. S. thompson was isolated in feces from both dogs and also from dust in the home vacuum cleaner. Because one of the dogs had been recently acquired, stool specimens from its mother and a litter-mate were examined but found negative. Certain foods and a laxative found in the home proved to be free of salmonallae. Stool specimens submitted by two of the family members were negative for salmonellae.

2. On October 27, 1969, a 2 year old girl in Issaquah, Washington, experienced fever to 103°F, severe vomiting and diarrhea. Subsequently, she was hospitalized for 3 days each on two separate occasions, October 30 and November 6, with uncontrollable diarrhea, bloody stools and dehydration. During the first hospitalization, an alert physician suspecting salmonellosis implicated a sick parakeet in the home. His suspicions were confirmed upon isolation of Salmonella typhi-murium from both the child's stool and the parakeet's droppings. An epidemiologic investigation revealed that, prior to the child's illness, the parakeet had been in the trailer home for 1 month. During this time, the child had not touched the bird, but played on the floor around the parakeet's cage. Accordingly, dust from a vacuum cleaner bag in the home was submitted to the Seattle-King County Health Department Laboratory. S. typhi-murium was isolated from the dust. While the parakeet was in the home, the parents shared the responsibility of cleaning the cage and feeding the bird. The mother was careful to wash her hands after accomplishing the task. However, the father, who had a nervous habit of biting his fingernails, was not particular about handwashing. He experienced diarrhea on October 19. S. typhi-murium was isolated from the father's stool specimen but not from the mother. On October 13, after 2 days of eating a special commercial mixture of bird feed, the parakeet developed diarrhea. S. typhi-murium was isolated from the opened feed container. However, five unopened packages of the same lot obtained at stores did not yield salmonellae. S. typhi-murium cultures from all sources were untypable by phage typing procedures performed at the National Communicable Disease Center.

3. An outbreak of salmonellosis recently reported by the City of Milwaukee Health Department involved a 1-year-old boy hospitalized with severe diarrhea and fever. Stool cultures yielded Salmonella thompson. Following treatment with ampicillin, the patient was discharged after 4 days in the hospital. The child's parents and two siblings were asymptomatic; however, in a stool culture survey, the child's mother was positive for S. thompson. Two months prior to the child's illness the parents had purchased two red-eared turtles from a five-and-ten variety store. S. thompson was isolated from the turtle bowl water and from the viscera of both turtles. Cultures obtained from commercial turtle food and from a turtle rinse product were negative for salmonellae. Ten turtles remaining at the variety store were purchased and cultures were obtained from the viscera of each. Salmonellae recovered from four turtles were subsequently identified as S. johannesburg (2), S. muenchen (1), and S. thompson (1).

4. Another turtle-associated salmonellosis outbreak was reported by the Ohio Department of Health. On February 18, 1970, a 1-month-old boy was hospitalized in Dayton, Ohio, with anorexia and lethargy. Specimens of blood and spinal fluid obtained from the baby yielded Salmonella enteritidis. The patient responded to antibiotic therapy and was discharged following negative spinal fluid cultures. On March 11, the baby again became lethargic and was readmitted to the hospital where he experienced convulsions. Spinal fluid cultures again revealed S. enteritidis; recurrent salmonella meningitis with a sub-dural abscess was diagnosed. In a culture survey, S. enteritidis was also recovered from the baby's father who had experienced diarrhea shortly after the baby became ill. Three other family members had negative stool cultures. The family owned two pet turtles which had been in the home for over 1 year. Anal swab cultures of both turtles yielded S. enteritidis.

EDITOR'S COMMENT: As exemplified by two of the above reports, pet turtles and their immediate environment continue to serve as a potential disease hazard, particularly to young children. The high incidence of salmonella infections in turtles can be attributed to heavily contaminated breeding ponds which remain populated year-round.

Several factors contribute to this pond contamination: First, turtle production requires the climatic and moisture conditions best satisfied by swampland regions in the southern coastal states. In these areas, warm stagnant water provides a suitable growth media for salmonellae shed by reptiles and other native wildlife species during

the summer months. Further contamination occurs by the addition of turtle feedstuffs into the pond water, at times including raw offal from nearby livestock processing operations. Finally, the cycle of salmonella contamination is perpetuated by the breeding turtles themselves. Since turtle salmonellosis is usually an inapparent infection producing no signs of disease in the host, infected turtles survive to become chronic salmonella shedders, thereby increasing the concentration of organisms in their environment.

Baby turtles destined for eventual sale in pet shops are usually harvested before hatching; that is, before actually contacting the contaminated water. Still a significant percentage of these turtles are infected by penetration of the egg following surface contamination and also by transovarian passage of salmonellae.

There is clearly a need for an effective means for controlling salmonellosis in turtles. The public health hazard can be abated to a large extent by regulations such as those implemented by the Washington State Department of Health (see Salmonella Surveillance Report No. 65) which provide for bacteriologic examination of all imported turtles. This procedure is quite expensive,however, and may miss some turtles which are intermittantly shedding salmonellae. Alternatively, the problem could be attacked at its source, the contaminated breeding ponds. A workable solution may be afforded by chemical disinfection of pond water in conjunction with restricted use of raw animal protein feeds. A study utilizing both of these control methods is now underway at one turtle breeding operation. Preliminary results indicate that controlled application of cupric sulfate to the ponds can effectively and economically inhibit salmonellae without adverse affects on the turtle population.

V. SPECIAL REPORTS

A. Recent Articles on Salmonellosis

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

1. Baker JR: Salmonellosis in the horse. Brit Vet J 126:100, 1970

2. Brownell JR, Sadler WW, Fanelli MJ: Role of bursa of fabricius in chicken resistance to Salmonella typhi-murium. Avian Dis 14:142, 1970

3. Brownell JR, Sadler WW, Fanelli MJ: Role of ceca in intestinal infection of chickens with Salmonella typhi-murium. Avian Dis 14:106, 1970

4. Childers AB, Leahey EE: Sources of salmonella contamination of meat following approved livestock slaughtering procedures. J Milk & Food Tech 33:10, 1970

5. Clay AL: The occurrence of salmonella in slaughtered pigs. Aust Vet J 45:591, 1969

6. Corry JE, Kitchell AG, Roberts TA: Interactions in the recovery of Salmonella typhi-murium by heat or gamma radiation. J Appl Bact 32:415, 1969

7. Davies ET: Salmonella vaccination of adult cattle. Vet Record 86:330, 1970

8. Ewing WH, Ball MM, Bartes SF, McWhorter AC: The biochemical reactions of certain species and bioserotypes of salmonella. J Infect Dis 121:288, 1970

9. Fanelli MJ, Sadler WW, Brownell JR: Preliminary studies on persistance of salmonellae in poultry litter. Avian Dis 14:131, 1970

10. Hargrove RE, McDonough FE, Mattingly WA: Factors affecting survival of salmonella in cheddar and colby cheese. J Milk & Food Tech 32:480, 1969

11. McCaughey WJ, McClelland TG, McBride PS: An outbreak of Salmonella give infection in cattle. Vet Record 89:422, 1970

12. Nakano M, Saito K: Protective components in the cell wall of Salmonella typhi-murium against bacteriocidal action of antibody. Jap J Microbiol 29:83, 1970

13. Pearson HE, Grant WJ: Presumed transmission of salmonella by sigmoidoscope. Calif Med 112:23, 1970

14. Ranjit S, Saxena SN: A critical assessment of the conventional Widal test in the diagnosis of typhoid and paratyphoid fevers. Indian J of Med Research 57:1813, 1969

15. Rankin JD, Taylor RJ: An attempt passively to immunise calves against Salmonella infection by vaccination of their dams. Vet Record 86:254, 1970

16. Rankin JD, Taylor RJ, Burrows MR: Observations on the effect of introducing salmonella infected calves to a commercial beef-rearing unit. Vet Record 86:366, 1970

17. Reichle FA, Tyson RR, Soloff LA, Lautsch EV, Rosemond GP: Salmonellosis and Aneurysm of the distal abdominal aorta: Case report with a review. Ann Surg 171:219, 1970

18. Robertson RP, Wahab MFA: Influence of chloramphenicol and ampicillin on antibody response in typhoid-paratyphoid fever. Ann Intern Med 72:219, 1970

19. Sims JE, Kelley DC, Foltz VD: Effects of time and temperature on salmonellae in inoculated butter. J Milk & Food Tech 32:485, 1969

20. Stuart EE, Keenum RD: Preincubation treatment of chicken hatching eggs infected with Salmonella pullorum. Avian Dis 14:87, 1970

B. Recalls of Products Contaminated with Salmonellae for Period March 25, 1970, to May 20, 1970 (reported by the U. S. Food and Drug Administration).

From March 25, 1970 to May 20, 1970, eleven products were recalled by manufacturers and distributors because of salmonella contamination. These products as reported by the U. S. Food and Drug Administration are summarized in the table below.

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot No.	Use	Depth of Recall	Product Distribution	Serotype
4/1	Lipton Turkey Noodle Soup Mix	(Mfr.) Thomas J. Lipton, Inc., Albion, New York	9X11 9L12 0B6	Food	Retail	National	S. anatum
	Pasteurized dried stabilized yolk solids	(Mfr.) Seymour, Inc., Topeka, Kansas	014-0 015-0	Food	Processor	Kansas and Delaware	S. tennessee
	Alba Instant Non-Fat Dry Milk	(Mfr.) Weldon Farm Products, Inc., Sibley, Iowa	10040	Food	Retail	Midwest	S. schwarzengrund
4/15	Lipton Chicken Vegetable Soup Mix	(Mfr.) Thomas J. Lipton Co., Inc., Albion, New York	All Lots	Food	Retail	National	S. anatum
	Lipton Ring-O-Noodle Soup Mix	(Mfr.) Thomas J. Lipton Co., Inc., Albion, New York	All Lots	Food	Retail	National	S. anatum
	Lipton Giggle Noodle Soup with Real Chicken Broth	(Mfr.) Thomas J. Lipton Co., Inc., Albion, New York	All Lots	Food	Retail	Test Marketed New England	S. anatum
	Lipton Beef Flavor Noodle Soup with Vegetables	(Mfr.) Thomas J. Lipton Co., Inc., Albion, New York	All Lots	Food	Retail	National	S. anatum

Recalls of Products Contaminated with Salmonellae (Continued)

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot No.	Use	Depth of Recall	Product Distribution	Serotype
4/27	Alba Flavored Artificially Sweetened Instant Non-Fat Dry Milk	(Mfr.) Weldon Farm Products, Inc., Sibley, Iowa	10034	Food	Retail	Florida, New York, New Jersey	S. tennessee
5/13	Bravo Enriched Egg Noodles	(Mfr.) Bravo Macaroni Co., Inc., Rochester, New York	040570 040670 040770	Food	Retail	New York, Michigan, Pennsylvania, Ohio	S. schwarzengrund
5/20	Leaf Thyme	(Mfr.) R. T. French Co., Rochester, New York	B110 & B120	Food	Retail	National plus International U.S. Military Bases	S. newport
	Bravo Enriched Macaroni Rings	(Mfr.) Bravo Macaroni Co., Inc., Rochester, New York	None	Food	Wholesale	Rochester, New York	S. anatum

VI. INTERNATIONAL

NONE

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, APRIL, 1970

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				1	1	2	1	1		3																	1
bareilly								1																				1			1
blockley	1		2	1		2		2	4	4	5	2	1	6	8								1		3	1	3		1		2	2
braenderup				1												3															
bredeney				1					3	2	2			2									1	1	1							
chester											2			2	1															1	
cholerae-suis v kun											1			1	1																
cubana				2									1		2										1			1		3	1
derby				1				1	1	1				6	3	2	1								6					3	
enteritidis				3	1	3		6	13	3	16	7	3	13	8	3			1	1					3	1	9		4		8	2
give				1										1	2																1
heidelberg				5				5	6	3	20	1	1	14	4		2						12	1	6	1	4		2		4	4
indiana												3	3	1											4					1	
infantis				2	4	1	1			3	10	4	1	2	3	1	2	1	2	1			1	1	2		10	1	2		12	7
java					1	2				2	2			1		1	1						2						2		1	2
javiana																															2
litchfield				1		1					2		1		1			1							1					3	1
livingstone								1								1															
manhattan						1		1	2		4	1		3	2										3				1			1
miami																	1														2
mississippi																1														1	
montevideo			1	5						1	2	9													1					1	1
muenchen								1	3			1		1	2	1															1
newington												1																			1
newport				1		1		4	7	2	5	1	3	1	1	6							3		1	1	2		1		1	4
oranienburg				2				1		1	2			1		1	4										1			2	1
panama														1	1																
paratyphi B				1					1			2			4			2									2				
reading																															
saint-paul				4				2	5	2	8	1		5	9	1	1		1				1		8		2		4		1	
san-diego			1											1		1															
schwarzengrund												1																	1			
senftenberg																1	1														
tennessee									1	1				1																	1	1
thompson				2	1	1		1	7		14	4		8	7	6	2	1							1				6		6	5
typhi				1			1	2		1	3	5	2		4				1								1	1	1			
typhimurium				23	1	8		19	20	29	27	16	11	30	46	6	5	5			12		9	3	7	1	5		11	1	16	7
typhimurium v cop				5		1				2					2																
weltevreden																	1											1			
worthington											1		1	1														1		1	
TOTAL	1	–	4	63	8	21	2	48	74	59	127	60	28	105	111	35	21	10	5	2	12	–	30	6	48	5	39	2	40	1	68	48
ALL OTHER*	–	10	–	4	8	–	21	3	4	1	2	5	–	3	1	1	–	5	–	–	–	–	2	–	3	18	2	–	3	1	3	5
TOTAL	1	10	4	67	16	21	23	51	78	60	129	65	28	108	112	36	21	15	5	2	12	–	32	6	51	23	41	2	43	2	71	53

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 114 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			1		2											2			17	1.0	58	1.0	*anatum*
																					3	0.2	13	0.2	*bareilly*
					2		3				1							14			71	4.1	197	3.3	*blockley*
	2																	1			7	0.4	13	0.2	*braenderup*
					1		1											2		1	18	1.0	59	1.0	*bredeney*
																		3			9	0.5	24	0.4	*chester*
																					3	0.2	7	0.1	*cholerae-suis v kun*
	1	2		1	1																16	0.9	63	1.1	*cubana*
	1				1													3		3	33	1.9	134	2.3	*derby*
	5	1			1		2									1		5	2		125	7.2	434	7.3	*enteritidis*
																		2		5	12	0.7	18	0.3	*give*
2	1	2			3		3						3					13		4	126	7.3	512	8.7	*heidelberg*
		1									1										14	0.8	35	0.6	*indiana*
2	4	4			1	1	1				1							15		4	107	6.2	335	5.7	*infantis*
								1										3			21	1.2	93	1.6	*java*
																		2			4	0.2	31	0.5	*javiana*
																					12	0.7	55	0.9	*litchfield*
																					2	0.1	6	0.1	*livingstone*
	1					1	1									1		2			25	1.4	117	2.0	*manhattan*
																					3	0.2	9	0.2	*miami*
		1																			3	0.2	5	0.1	*mississippi*
					1		3				1					1		4			31	1.8	89	1.5	*montevideo*
					1		1				1							3			16	0.9	58	1.0	*muenchen*
																					2	0.1	6	0.1	*newington*
1	3		1	2	4	2	7				2		9	1		1		17		3	98	5.7	375	6.3	*newport*
							1						2	1				6			26	1.5	97	1.6	*oranienburg*
							2				1		1				1	1		3	11	0.6	38	0.6	*panama*
1		1					1														15	0.9	46	0.8	*paratyphi B*
1																1	2	1			5	0.3	25	0.4	*reading*
	1				2													4	2		64	3.7	239	4.0	*saint-paul*
																		3			6	0.3	134	2.3	*san-diego*
																					2	0.1	20	0.3	*schwarzengrund*
							1				1						1	1			6	0.3	19	0.3	*senftenberg*
					1																6	0.3	17	0.3	*tennessee*
1	3			1	1		4									1		17		1	101	5.8	267	4.5	*thompson*
1				1			1					2	2				1	5		1	37	2.1	138	2.3	*typhi*
5	4	6		3	5	4	14		1		9		4	4		7	7	62		18	471	27.2	1449	24.5	*typhimurium*
					4																14	0.8	67	1.1	*typhimurium v cop*
					7															5	14	0.8	35	0.6	*weltevreden*
																				2	7	0.4	24	0.4	*worthington*
14	26	19	1	8	37	8	48	1	1	–	18	2	21	6	–	13	12	191	4	50	1563	90.3	5361	90.6	TOTAL
–	2	2	6	–	2	2	14	–	–	–	–	11	–	–	1	3	2	12	5	–	167		553		ALL OTHER*
14	28	21	7	8	39	10	62	1	1	–	18	13	21	6	1	16	14	203	9	50	1730		5914		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, APRIL, 1970

SEROTYPE	REPORTING CENTER																						
	ALA	ALK	CAL	DC	FLA	GA	ILL	IOW	KAN	LA	MD	MAS	MIC	MIS	NEV	NH	NJ	NM	NYA	NYB	NYC	NC	OHI
albany											1												
amsterdam																				1			
atlanta						1																	
ball																							
berta			3							2		2											
binza																						1	
california			1			1																	
canastel			1																				
cerro																							
cholerae-suis																					1		
coeln				1																1	1		
concord									1														
dublin			2																				
eimsbuettel											2												
gaminara																						1	
georgia	1																						
habana					1																		
hartford	1				1																		
inverness													1										
kaapstad																							
kentucky																							
kottbus																							
lindenburg																							
lomita																							
london							2																
manchester																							1
minneapolis			1																				
minnesota																							1
molade					1																		
muenster																	1						1
orion								3															
paratyphi A																					1		
poona			1			1																	1
potsdam												1											
rubislaw																							
siegburg																							1
stanley									1														
suberu																				1			
thomasville																							
urbana																						1	
virchow			1																				
TOTAL	2	—	10	1	3	3	2	3	2	2	3	3	1	—	—	—	1	—	—	3	3	3	5
NOT TYPED*	—	5	2	17	2	—	1	2	—	—	—	1	—	6	1	10	—	11	21	—	1	—	—
TOTAL	2	5	12	18	5	3	3	5	2	2	3	4	1	6	1	10	1	11	21	3	4	3	5

* See Table V-A

TABLE II – Continued

REPORTING CENTER														TOTAL	CUMULATIVE TOTAL	SEROTYPE
OKL	ORE	PA	RI	SC	TEN	TEX	VA	WAS	WIS							
					1									2	8	*albany*
														1	1	*amsterdam*
														1	1	*atlanta*
								1						1	1	*ball*
														7	21	*berta*
														1	4	*binza*
														2	3	*california*
														1	1	*canastel*
								1						1	5	*cerro*
														1	2	*cholerae-suis*
														3	4	*coeln*
														1	2	*concord*
														2	3	*dublin*
														2	3	*eimsbuettel*
						1								2	4	*gaminara*
														1	1	*georgia*
														1	1	*habana*
														2	4	*hartford*
														1	1	*inverness*
		1												1	1	*kaapstad*
					1									1	10	*kentucky*
		1												1	3	*kottbus*
							1							1	1	*lindenburg*
						1								1	1	*lomita*
														2	3	*london*
														1	4	*manchester*
														1	1	*minneapolis*
														1	15	*minnesota*
														1	1	*molade*
														2	6	*muenster*
														3	4	*orion*
														1	1	*paratyphi A*
														3	25	*poona*
														1	1	*potsdam*
							1							1	1	*rubislaw*
								1						2	5	*siegburg*
									1					2	2	*stanley*
														1	1	*suberu*
						1								1	2	*thomasville*
														1	10	*urbana*
														1	1	*virchow*
–	–	2	–	–	2	3	2	3	1					63	240	TOTAL
2	2	–	8	1	–	11	–	–	–					104	313	NOT TYPED*
2	**2**	**2**	**8**	**1**	**2**	**14**	**2**	**3**	**1**					**167**	**553**	**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, 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum		7	1	3	1	1	13	6			6
bareilly							–	1			1
blockley	13	3	1			2	19				–
braenderup							–				–
bredeney	1						1	6		1	7
chester		8					8				–
cholerae-suis v kun			39	1			40				–
cubana							–	12			12
derby		5	1				6	4		1	5
enteritidis	7					2	9				–
give		1					1				–
heidelberg	21	53	3		2	1	80				–
indiana	1						1			5	5
infantis	18	1	1			2	22	11		1	12
java						1	1				–
javiana							–				–
litchfield							–				–
livingstone	1		2			1	4	1			1
manhattan		1					1				–
miami		1					1				–
mississippi							–				–
montevideo	11						11	12		3	15
muenchen		8					8				–
newington							–				–
newport		2	1	9	5	1	18	1			1
oranienburg			1				1	4			4
panama			1				1				–
paratyphi B							–				–
reading		4					4				–
saint-paul	7	57	2	1			67				–
san-diego	1	8	1				10				–
schwarzengrund	1	2	2				5			1	1
senftenberg	7	9					16	7		5	12
tennessee	5						5	10			10
thompson	14	1	2			1	18	2			2
typhi							–				–
typhimurium	8	21	22	38	1	18	108	1			1
typhimurium v cop	7		2	20		2	31				–
weltevreden							–				–
worthington	32	2				1	35				–
TOTAL	155	194	82	72	9	33	545	78	–	17	95
ALL OTHER*	37	18	6	10	2	11	84	67	3	16	86
TOTAL	**192**	**212**	**88**	**82**	**11**	**44**	**629**	**145**	**3**	**33**	**181**

* 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		1		2		3	3	26	212	*anatum*
							–		1	15	*bareilly*
			4				4		23	68	*blockley*
	1	1					1		2	10	*braenderup*
							–		8	60	*bredeney*
							–		8	18	*chester*
							–		40	159	*cholerae-suis v kun*
		1				1	2		14	28	*cubana*
				3			3		14	47	*derby*
	3						–	2	14	56	*enteritidis*
				1			1		2	5	*give*
2			1	1			2		84	325	*heidelberg*
							–		6	19	*indiana*
1	3	5	1	1		2	9	1	48	127	*infantis*
1	1						–		3	17	*java*
							–		–	3	*javiana*
							–		–	2	*litchfield*
1							–		6	24	*livingstone*
		1					1		2	11	*manhattan*
							–		1	7	*miami*
1							–		1	1	*mississippi*
		1	2	4	8	1	16	1	43	103	*montevideo*
					1		1		9	13	*muenchen*
						1	1		1	9	*newington*
			2	4		1	7		26	84	*newport*
		2		12	1		15		20	79	*oranienburg*
							–		1	2	*panama*
							–		–	2	*paratyphi B*
							–		4	21	*reading*
		1					1		68	239	*saint-paul*
	1						–		11	79	*san-diego*
		1					1		7	28	*schwarzengrund*
				4			4	1	33	124	*senftenberg*
					3		3	1	19	71	*tennessee*
	1						–	1	22	163	*thompson*
							–		–	–	*typhi*
5							–	2	116	373	*typhimurium*
1			1				1		33	77	*typhimurium v cop*
							–		–	–	*weltevreden*
					1		1		36	95	*worthington*
12	11	13	12	30	16	6	77	12	752	2776	TOTAL
24	3	1	1	–	4	2	8	3	208	709	ALL OTHER*
36	**14**	**14**	**13**	**30**	**20**	**8**	**85**	**15**	**960**	**3485**	**TOTAL**

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, APRIL, 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
alachua							–	1			1
albany	1						1				–
amsterdam	1						1	1			1
arkansas							–			1	1
berta							–				–
binza	1						1	1		2	3
bovis-morbificans						1	1				–
brancaster		1					1				–
california	2						2				–
carrau							–	1		1	2
cerro	1						1	7		1	8
cholerae-suis			3				3				–
drypool							–	1			1
dublin				9			9				–
eimsbuettel	13	3	1				17	24		1	25
hartford		1		1			2				–
illinois							–	1			1
kentucky							–	1			1
lexington						2	2		2		2
lille							–			1	1
madelia							–	3			3
manila		1					1				–
meleagridis	1						1				–
minnesota						1	1	16			16
muenster	3		1				4				–
new-brunswick							–	1			1
orion							–			1	1
pomona							–	1			1
poona						4	4				–
pullorum	1						1				–
rubislaw					2		2				–
siegburg		1					1	2		1	3
simsbury	6						6		1		1
taksony		1					1				–
thomasville		2				2	4	1		6	7
tuindorp							–				–
urbana							–				–
westerstede	1						1				–
westhampton							–	1			1
TOTAL	31	10	5	10	2	10	68	63	3	15	81
NOT TYPED*	6	8	1	–	–	1	16	4	–	1	5
TOTAL	**37**	**18**	**6**	**10**	**2**	**11**	**84**	**67**	**3**	**16**	**86**

*See Table V-B

TABLE IV – 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	5	*alachua*
		1					1		2	10	*albany*
							–		2	2	*amsterdam*
							–		1	1	*arkansas*
			1				1		1	7	*berta*
							–		4	13	*binza*
1	1					1	1		4	4	*bovis-morbificans*
							–		1	1	*brancaster*
							–		2	14	*california*
							–		2	2	*carrau*
							–		9	24	*cerro*
							–		3	7	*cholerae-suis*
						1	1		2	18	*drypool*
							–		9	29	*dublin*
							–		42	111	*eimsbuettel*
2							–		4	5	*hartford*
							–		1	1	*illinois*
					1		1		2	46	*kentucky*
							–		4	8	*lexington*
							–		1	2	*lille*
							–		3	7	*madelia*
							–		1	3	*manila*
8							1		9	19	*meleagridis*
7					3		3		27	69	*minnesota*
							–		4	14	*muenster*
							–		1	1	*new-brunswick*
							–		1	12	*orion*
							–		1	3	*pomona*
3							–		7	8	*poona*
2							–		3	29	*pullorum*
							–	1	3	4	*rubislaw*
							–		4	33	*siegburg*
							–		7	15	*simsbury*
							–		1	17	*taksony*
							–		11	25	*thomasville*
	1						–		1	1	*tuindorp*
	1						–	2	3	18	*urbana*
							–		1	2	*westerstede*
							–		1	1	*westhampton*
23	3	1	1	–	4	2	8	3	186	645	TOTAL
1	–	–	–	–	–	–	–	–	22	64	NOT TYPED*
24	**3**	**1**	**1**	**–**	**4**	**2**	**8**	**3**	**208**	**709**	**TOTAL**

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, APRIL, 1970

A. HUMAN SOURCES

REPORTING CENTER	GROUP															TOTAL
	B	C	C1	C2		D	E	G	H		M	Q	W	UNK		
ALASKA	2		2											1		5
CALIFORNIA	2															2
DISTRICT OF COLUMBIA	8		6											3		17
FLORIDA				1				1								2
ILLINOIS	1															1
IOWA	1	1														2
MASSACHUSETTS	1															1
MISSISSIPPI	3		2			1										6
NEVADA						1										1
NEW HAMPSHIRE	7		2	1												10
NEW MEXICO	5		2	2		2										11
NEW YORK-A														21		21
NEW YORK-C	1															1
OKLAHOMA	1		1													2
OREGON				2												2
RHODE ISLAND	7													1		8
SOUTH CAROLINA														1		1
TEXAS	4		2	2			1	1						1		11
TOTAL	43	1	17	8		4	1	2	–		–	–	–	28		104

B. NONHUMAN SOURCES

SOURCES	GROUP															TOTAL
	B	C	C1	C2		D	E	G	H		M	Q	W	UNK		
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	6												1	9		16
ANIMAL FEEDS	1								1		1	1		1		5
WILD ANIMALS AND BIRDS	1															1
REPTILES AND ENVIRONMENT																–
HUMAN DIETARY ITEMS																–
MISCELLANEOUS																–
TOTAL	8	–	–	–		–	–	–	1		1	1	1	10		22

STATE EPIDEMIOLOGISTS AND STATE LABORATORY DIRECTORS

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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Wyoming	Herman S. Parish, M.D.	Donald T. Lee, Dr.P.H.