REPORT NO. 116
THIRD QUARTER 1972
ISSUED MARCH 1973

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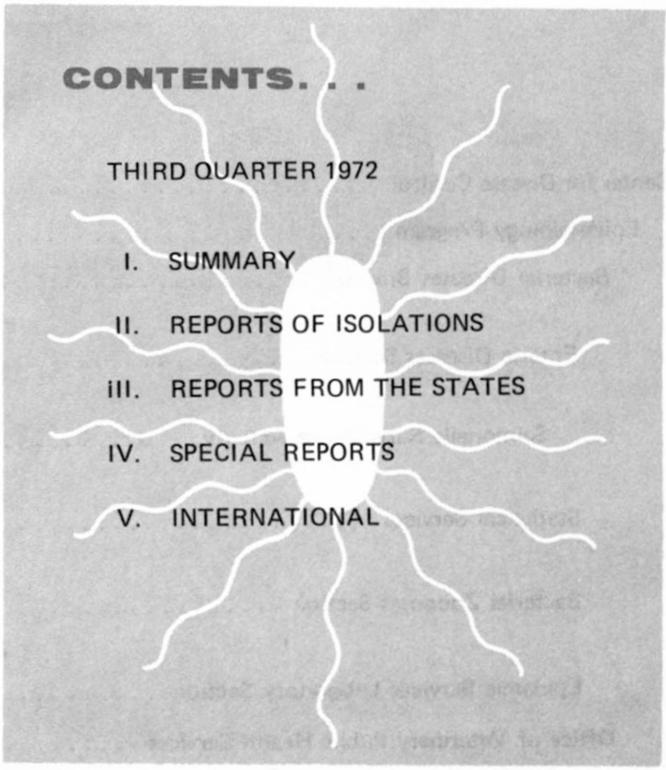
SALMONELLA

SURVEILLANCE



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THIRD QUARTER 1972

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

PREFACE

Summarized in this report is information received from State and City Health Departments, university and hospital laboratories, the National Animal Disease Laboratory (USDA, ARS), Ames, Iowa, and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

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

Center for Disease Control
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SUGGESTED CITATION
Center for Disease Control: Salmonella Surveillance, July-September 1972
Issued March 1973

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*Through June 1972

March 7, 1973

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III. REPORTS FROM THE STATES

A. Reports of Salmonella Outbreaks Received During the 3rd Quarter, 1972

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

State	Month of Outbreak	Location	Serotype	Number: Ill	Number: At Risk	Number: With Positive Cultures	Number: Hospitalized	Number: Deaths	Mode of transmission	Comments
California	April	Annapolis	S. enteritidis	41	~100	6	0	0	?ham	YMCA camp. Ham ?cross-contaminated from chicken and turkey.
New Jersey	"	Dover	S. typhimurium	8	>150	8	7	0	person to person	Hospital outbreak.
" "	"	Pemberton	S. java	16	52	49	1	0	?food	Outbreak after home-cooked food served at drug rehabilitation center.
Washington	April-May	Yakima	S. typhi	4	5	4	4	0	well water	Water contaminated by sewage from house of neighboring carrier.
New Jersey	May		S. typhimurium	12	?	12	12	4	person to person	Reported in detail in this issue.
New York	June	Oswego Co.	S. kottbus	~150	~200	≥32	?30-40	0	not identified	Two meals served at Elks' Club. Kitchen widely contaminated.
Alaska	June-July	Anchorage	Salmonella B	10	?	?	?	?	person to person	Prolonged trailer camp outbreak.
New Jersey	June-July		S. saint-paul	3	?	3	3	0	person to person	Nursery outbreak.
Alabama	June-August	Autauga Co.	S. typhi	7	?	7	4	0	not identified	Outbreak among children in several families after visit by carrier from Ohio.
Arizona	July	Apache Co.	S. derby	?	?	10	?	0	not identified	Outbreak among family and contacts on Indian reservation.
Arkansas	"	Yell Co.	S. montevideo	10	11	10	0	0	homemade ice cream--culture positive	Family outbreak.
Iowa	"	Marshall Co.	S. typhimurium	2	?	2	1	0	not identified	Family outbreak.
Kentucky	"	Falmouth	S. chester	11	>200	2	7	0	foot-long hot dogs with chili and onions	Restaurant outbreak. Positive cultures in food handlers.

Massachusetts	July	West Springfield	S. typhi	3	13	3
Missouri	"	Polk Co.	S. newport	1	?	3
Oregon	"	Portland	S. manhattan	1	4	3
Pennsylvania	"	Philadelphia area	S. virchow	?	?	11
"	"	Villanova	S. enteritidis	44	58	?
Virginia	"	Deltaville	S. typhimurium	45	75	17
Utah	July-August	Salt Lake City	S. derby	8	?	8
California	August	La Puente	S. typhimurium	69	118	47
Kansas	"	Douglas	S. infantis	12	12	12
North Carolina	"	Raleigh	S. muenchen	5	?	4
North Carolina	"	Stanly and Cabarrus Cos.	S. newport	9	49	4
Pennsylvania	"	Buckhorn	S. braenderup	7	7	5
"	"	Schuylkill Haven	S. thompson	31	~1000	15
Rhode Island	"	Washington Co.	S. enteritidis	10	172	11

3	0	carrier	Family outbreak.
1	0	not identified	Family outbreak.
0	0	not identified	Family outbreak.
1	0	not identified	Scattered cases--most in young adults.
?	?	gelatin salad, chicken salad	
3	0	homemade ice cream--culture positive	Outbreak at church supper
?	?	not identified	Citywide outbreak.
31	?2	?poultry	Retarded children's home.
11	0	homemade ice cream-ice cream & eggs culture positive	Outbreak after party.
3	0	person to person	Reported in detail in this issue.
3	0	deviled eggs	Church dinner.
3	0	homemade ice cream--culture positive	Cracked eggs used in making ice cream.
12	0	homemade coconut cream pie--culture positive	Person making pie had positive culture, no symptoms.
2	0	not identified	Outbreak at resort hotel. Most cases among kitchen staff.

B. Salmonellosis in Nurseries Due to Maternal Infection--New Jersey and North Carolina. Reported by A. Todd Davis, M.D., EIS Officer, and Ronald Altman, M.D., State Epidemiologist, New Jersey State Department of Health.

In May 1972 a 2-day-old premature infant in a New Jersey hospital developed a severe Salmonella typhimurium infection. Despite intensive antibiotic treatment, the child died 6 days later. Epidemiological investigation revealed that the infant's mother had been admitted to the hospital in labor with a 3-day history of fever, vomiting, and diarrhea. Culture of her stool revealed S. typhimurium. A 2nd premature infant, sharing a room with the index case, subsequently developed S. typhimurium infection and died. A 3rd premature infant, in an adjoining room in the nursery, also contracted S. typhimurium infection but recovered clinically and was discharged home in midsummer. Two weeks later 1 of his siblings was hospitalized with severe gastroenteritis due to S. typhimurium. The same, 3rd, premature infant was subsequently placed in a home with several other foster children. One of these children thereupon became infected with S. typhimurium, was hospitalized on December 11, and died 4 days later. In addition, a full-term baby, who had been in the nursery at the same time as the index case, had become infected with this salmonella serotype. He was transferred to the pediatric ward, where 4 children in beds close to his also developed S. typhimurium infections. One of these was released from the hospital against medical advice, ostensibly to be taken to another hospital. Two days later this child was returned to the original hospital but had received no medical care in the interim and died 36 hours after readmission. In addition to the infections that occurred among children, S. typhimurium pyelonephritis was documented in October in a nurse who had cared for the premature infants. Her initial illness was succeeded in December by severe S. typhimurium gastroenteritis requiring inpatient treatment. She received an 8-week course of chloramphenicol without effect on her culture status, and it was not until March 1973, when her stool and bile cultures spontaneously reverted to negative, that she was permitted to return to work at the hospital. Control of the outbreak was ultimately achieved after successful cohort nursing techniques were introduced to insure that personnel working with infected children did not come into contact with other patients.

Reported by Brian Lauer, M.D., EIS Officer, and Martin P. Hines, D.V.M., State Epidemiologist, North Carolina State Board of Health.

In August 1972 an 8-day-old infant in a Raleigh, North Carolina, hospital developed meningitis due to Salmonella muenchen. The patient's 2 older siblings had had diarrhea in early July, and the mother of the index case had developed diarrhea 2 days before entering the hospital for delivery. Stool cultures of the index case, the mother, 1 sibling, and a newborn who shared the nursery with the index case were all positive for S. muenchen.

Control measures included culturing all hospital personnel who had contact with the mother and the index case, all of which were negative, and closing the nursery. The index case was treated with ampicillin and kanamycin and recovered satisfactorily.

Editorial Note: Outbreaks of salmonellosis in newborn nurseries traceable to index cases born to mothers with gastroenteritis have frequently been reported.[1,2,3] Infants probably acquire the infection at birth by contact with the maternal perineum. Subsequent cases can occur among other infants through contact spread by the nursing staff. Contaminated fomites in the obstetrical area and nursery have also been implicated in propagating such outbreaks.[4,5] Typically, the diagnosis of salmonella gastroenteritis in the mother of the index case is not made until detection of an outbreak leads to a retrospective investigation. By then dissemination of the salmonella may be widespread among personnel and in the hospital environment. The extent of such spread should be determined by a culture survey of patients and staff. Effective control measures include segregating infected babies, preventing nursing personnel who work with them from attending uninfected infants, and scrupulous handwashing by hospital personnel before and after every contact with an infant.

It would be far preferable to prevent the outbreak by appropriate prophylactic measures. A history of diarrheal illness should be sought from every woman presenting in labor to a hospital. Stool cultures should be obtained from all those complaining of gastroenteritis. Meanwhile, babies born to mothers with a recent history of diarrhea should be segregated from other nursery children and placed under enteric isolation precautions until the possibility of their having acquired salmonellosis from their mothers has been ruled out. A recent legal decision[6] emphasizes the responsibility of the hospital to insure that outbreaks of this kind do not occur.

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IV. SPECIAL REPORTS

A. The Role of Person-to-Person Transmission in Salmonellosis.

It has been customary to state that most human salmonellosis is due to ingestion of contaminated food.[1] Transmission of salmonella infection from infected wild or domestic animals[2] to people has also been recognized. The role of contact transmission from one person to another in propagating human salmonellosis is generally considered to be a minor one.[3] Nevertheless, person-to-person spread was suspected or documented in 6 of the 25 outbreaks of nontyphoid salmonellosis reported to the CDC in 1971 in which the mode of transmission was identified.[4] The prominence of apparent interpersonal spread of infection in outbreaks of human salmonellosis reported to the CDC and its seeming conflict with traditional epidemiological teaching requires elaboration.

Definition answers to questions concerning risk of person-to-person spread in human salmonellosis and of its significance must await further research. Nevertheless, available evidence supports 4 statements:

1. Person-to-person transmission of nontyphoid salmonellosis is commonly a phenomenon of a specific type of setting.
2. An outbreak in such a setting is unusually likely to be detected and reported to CDC.
3. The precise degree to which transmission in such outbreaks is genuinely from person to person is not always clear.
4. Individual differences in host susceptibilities may be important in determining person-to-person spread of salmonella infection.

Information on the sources of infection in apparently sporadic cases of salmonellosis is not generally available. Most data on transmission of salmonellosis derive from investigations of outbreaks. The 6 reported salmonellosis outbreaks in 1971 in which transmission was believed to be person to person all occurred in hospitals. In salmonellosis person-to-person spread and cross-infection have repeatedly been observed as phenomenona characteristic of outbreaks in hospitals,[5,6] nursing homes,[7] and similar institutions.

Only about 1% of the 2,000,000 cases of salmonellosis estimated to occur in the United States every year are reported to the CDC.[8] Detection, investigation, and reporting of outbreaks of salmonellosis are probably no more complete. In contrast, it is to be hoped that outbreaks of salmonella infections occurring in a hospital would not often escape eventual notice. Thus, nosocomial salmonellosis outbreaks, and hence person-to-person transmission, are probably disproportionally represented in the tabulation of salmonellosis outbreaks reported to CDC.

A further consideration is that person to person transmission is commonly determined by exclusion when the epidemiologic evidence does not support common-source exposure. The extent of person-to-person spread in the purest sense is commonly impossible to determine in retrospect. Virtually anyone working on a hospital ward may regarded as a sort of food handler, if only by virtue of his passing out trays or feeding patients. Thus the possibility of foods' serving as intermediary vehicles cannot be absolutely excluded in many outbreaks that supperfically appear to be spread by contact transmission. Furthermore, extensive environmental contamination[9] is commonly documented on a hospital ward that has a salmonella outbreak; one can only guess at the number of fomite-transmitted organisms a patient may be ingesting during a given period in the midst of such a setting.

A final consideration is that institutionalized subjects may represent a population that is unusually susceptible to ingestion of small doses of salmonella organisms.[10] Thus, the concept that the healthy adult is unlikely to become infected by an inoculum of salmonella contracted directly from an excreter may not be pertinent in the case of infants, the elderly, or the ill.

The considerations discussed above do not rule out the existence of contact transmission of salmonella infection apart from nosocomial outbreaks. Nevertheless, outbreaks involving person-to-person transmission reported to CDC are not representative of all salmonellosis in the United States. Extrapolation of data from these outbreaks to make inferences about the mode of spread in most cases of salmonella infection is thus unwarranted.

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B. Prolonged Carriage of Nontyphoid Salmonella

The Salmonella Surveillance Activity is frequently requested to provide recommendations concerning the management of long-term excreters of nontyphoid salmonella. It is not uncommon, for example, for follow-up culturing after a sizable outbreak of salmonellosis to reveal that a minority of the patients have positive stool cultures for weeks to months after their initial exposure. Whatever the public health importance of carriers of salmonella among the general public, it is understandable that particular concern has been directed to carriers among food handlers and hospital personnel. The financial and administrative problems raised by prolonged carriage of the organisms in such groups are undeniable. Not uncommonly, positive cultures are found among food handlers when investigation of an outbreak is conducted. The positive culture may indicate that the food handler ate the contaminated food, that he was coincidentally infected while handling raw contaminated food, or in some instances, that his infection antedated the outbreak and that he served as the source of contamination of the food. At any rate, there is understandable reluctance to allow food handlers to return to work while their cultures are still positive. Official Public Health Service recommendations state that food handlers with communicable diseases should be excluded from work during the time that they might serve as sources of contamination for food.[1] American Public Health Association recommendations specify that a food handler should not work until his stool cultures are free from salmonella for 3 successive days and furthermore stipulate that family contacts of those infected with salmonella should not be employed as food handlers during the period of such contact.[2] Adherence to such recommendations can impose a substantial financial strain on a food handler and his employer, particularly if the employee's cultures remain persistently positive.

Similar problems exist when salmonella excreters are detected among personnel in hospitals and similar institutions, as during investigations of nosocomial outbreaks. Although there are no official U S Public Health Service recommendations concerning salmonella carriage among hospital workers, the pertinent American Public Health Association recommendations[2] for those involved in care of patients, the young, or the elderly are the same as those for infected food handlers. Inasmuch as institutional outbreaks of salmonellosis not uncommonly involve asymptomatic infection of large numbers of staff members, adhering to APHS standards could not only produce hardship among those excluded from work but also temporarily create a critical personnel shortage in an affected hospital. It is not clear that interpersonal spread of salmonellosis in hospitals depends upon actual infection among staff members rather than mere passive transmission of the organisms from 1 patient to another on the unwashed hands of staff. It is apparent that an effective method for eradicating salmonella carriage would be welcome. Much attention has been given to treatment of the carrier state in typhoid. Reasonable success in eliminating Salmonella typhi carriage has been obtained with antibiotic treatment, cholecystectomy, or both.[3] To maximize effectiveness, antibiotic therapy has employed large doses of ampicillin or other drugs, sometimes administered intravenously[4] or with probenecid[5] for prolonged periods.

Unfortunately, the utilization of antibiotics in nontyphoid salmonella gastroenteritis has been unrewarding. There have been repeated demonstrations that treatment of acute salmonella gastroenteritis with such drugs probably serves only to prolong carriage of the organism.[6-8] Specific attention to treatment of the chronic nontyphoid salmonella carrier has been scanty. Regimens that have been advanced have been notable chiefly for their unsatisfactory documentaion of the true chronicity of the carrier state and for the ineffectuality with which they have cleared the organism.[9-11]

Since no current regimen can be depended upon to eradicate nontyphoid salmonella from stools, it is probably best to withhold antibiotics and count on the great likelihood that the problem will be solved by spontaneous subsidence of positive cultures.

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

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																															
	NEW ENGLAND						MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL							SOUTH ATLANTIC								
	ME	NH	VT	MAS	RI	CON	NYA	NYB	NYC	NJ	PA	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
anatum				14		1		5	2	3	5	1	1	10	4	2			2					1			3		2		4	15
bareilly				1		1		2			1		2	3	3		1							1		1	1					2
blockley	1		1	9		3		7	6	3	15	3	4	10	2	4	1		1		1			1	6		6		3		6	2
braenderup			2			2				4	6				1			1							2							1
bredeney						1		2		1	3			12	2	4			2				2		2						2	1
chester										5	5		1				1			1					4		1					
cholerae-suis v kun										1					1														1	1	2	
cubana						1		1		1	2				1				1								1					1
derby			2	3		3		5	1	10	8	10	6	7	3	3	2		1				1		10		7		1		9	15
enteritidis			2	21	8	21		28	9	8	56	22	2	101	16	12	5	9	8	1	1		9	1	27	1	6	1	19	1	8	11
give										1	1					1																1
heidelberg				21		3		7	2	17	23	11	25	30	22	5	2	2	8				7	1	21		4		8		21	28
indiana						1		4	2	4	7	3		5	2									1	11		1			1	6	4
infantis			1	20	2	16		9	6	16	15	9	1	43	25	7	7	5	9	1			55	1	16		6		13	1	25	18
java	1			12	1	2		3	3	4	4		1	15		3	1	6	2				2		2							2
javiana			1	3		4				4	1	1		2	1	2									1					1	18	43
litchfield				4		3		3	1	3			1	5	1				1				2		2		3		1			3
livingstone														1																1		
manhattan				1				1	2	3	6	4	2	16	8	6			2						1		1	1		3	3	2
miami						1		1																			1				2	19
mississippi														1															2		19	3
montevideo				1		1		2	2	2	7	4		5		3	1	3					3	2	7		1		2	1	3	11
muenchen			1	4				4	4	4	4			10	1	3			1				3	4	6		1		9	2	2	13
newington						1					1				1										4							
newport			1	8	1	8		22	19	21	35	16	4	41	25	16	13	4	14	2	1		11		4		5	4	25	6	41	69
oranienburg				5		2		2	5	9	8	7	3	13	8	8	3		7		1						5		6	2	3	7
panama				4		1		2		3	1			3		5									1		1					
paratyphi B				2				1	1			10	3	2	9		1		1					1			2	1		1		
reading	3			6	1	2			2	2			1	1		1											1		1			
saint-paul				10		7		24	9	24	35	11	3	11	5	9	8		2				2		28		1		11	1	10	24
san-diego			1	11				1	4		12				2	7								2							2	
schwarzengrund				1										2	1														1			
senftenberg				2						2	4			3	3			1						1			3		2		2	3
nessee						1		1		2		1		1	1	1							1									2
...ompson				12		4		5	1	2	18	2	4	22	9	6	2		2				2		5		3		3	1	9	8
typhi				11	1	1	2	7	5	1	1	4	3	6	2	2	1		2			1	4	2	1	1	3	1	4	2	4	13
typhimurium	5	1	4	101	11	63	1	75	42	81	94	36	43	111	76	83	52	26	51	9	11		22	5	53	4	92	5	56	3	62	60
typhimurium v cop	1			18		6				5					10			3						6								
weltevreden																																
worthington				1				1			1		1		1																1	
TOTAL	11	1	16	306	25	160	3	225	128	246	379	155	111	492	246	193	101	60	117	14	15	1	126	30	214	7	159	13	170	28	264	381
ALL OTHER*	–	11	1	16	22	14	150	13	5	13	67	2	5	46	29	22	11	11	11	2	3	7	4	1	23	40	10	–	19	3	37	21
TOTAL	**11**	**12**	**17**	**322**	**47**	**174**	**153**	**238**	**133**	**259**	**446**	**157**	**116**	**538**	**275**	**215**	**112**	**71**	**128**	**16**	**18**	**8**	**130**	**31**	**237**	**47**	**169**	**13**	**189**	**31**	**301**	**402**

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 315 cultures.

*See Table II.

TABLE I – Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER: EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN								PACIFIC					TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE TOTAL	SEROTYPE
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK	HAW					
			2		6		16				1		2	1			1	13	1	1	119	1.6	231	1.2	*anatum*
1	1		1	2			1			1			1								27	0.4	57	0.3	*bareilly*
		4	1	3	5		2				9					1		9		1	130	1.7	351	1.9	*blockley*
		3			1	1	4				1							1			30	0.4	100	0.5	*braenderup*
1		1		1	7		3		1				1					3		1	53	0.7	148	0.8	*bredeney*
3																					21	0.3	41	0.2	*chester*
																					6	0.1	16	0.1	*cholerae-suis v kun*
					1																10	0.1	48	0.3	*cubana*
	3	2			3		6						13	13		4		15		6	172	2.3	455	2.5	*derby*
4	6	4	1	2	4		16		1		3		1	1		3	2	8	2		472	6.2	1,255	6.8	*enteritidis*
		1			3		5						1				1	10			25	0.3	64	0.3	*give*
4	14	14	3	11	20	1	19	1	5		3		3	3		6	10	30		1	416	5.5	1,065	5.7	*heidelberg*
	1	1			2																56	0.7	126	0.7	*indiana*
3	10	7	1	2	10	7	14		2		2		7			4	6	29	2	9	442	5.8	1,188	6.4	*infantis*
3	7	2			5			1			6			1			1	17	3		110	1.4	341	1.8	*java*
1	1	6		16	14		62		1		1		2				1	3			190	2.5	357	1.9	*javiana*
	1				1		5						1					2			43	0.6	117	0.6	*litchfield*
							2						2					2			8	0.1	40	0.2	*livingstone*
	5	1			7			3									4	4			86	1.1	244	1.3	*manhattan*
							1														25	0.3	65	0.4	*miami*
	3	2	1	2	8		2														43	0.6	77	0.4	*mississippi*
	2	1		10	4		17				1		1	2		2		16		2	119	1.6	254	1.4	*montevideo*
	2	8	1	2	5		15						7			2		1	1	1	121	1.6	317	1.7	*muenchen*
													1					1		1	10	0.1	28	0.2	*newington*
3	15	16	9	44	15	2	109	1		1	10		14	6		1	4	28		25	719	9.4	1,475	8.0	*newport*
	2	6	3		13	1	14				3		6	1				6		2	161	2.1	487	2.6	*oranienburg*
1	1						5						3	1				11		20	63	0.8	140	0.8	*panama*
	2					1	8				1					1		5			53	0.7	138	0.7	*paratyphi B*
					1											2	5	4			33	0.4	71	0.4	*reading*
	4	1	2	4	8	1	9	1			1		1	1		2	4	15	3	2	294	3.9	672	3.6	*saint-paul*
		4			1								2					12		1	62	0.8	113	0.6	*san-diego*
						1	5				4			1		2		2		1	21	0.3	39	0.2	*schwarzengrund*
	1	1					6				1		2					5			42	0.6	129	0.7	*senftenberg*
							1									1		2			15	0.2	39	0.2	*tennessee*
	4	3	2	5	8	2	37				1					4	3	24		6	219	2.9	502	2.7	*thompson*
3	5			7	3	1	20						1	1		4	2	31			163	2.1	358	1.9	*typhi*
17	49	23	8	14	17	8	77	9	7		49		12	11		19	9	182	1	42	1,892	24.8	4,720	25.4	*typhimurium*
3	7			3	3		1	1	3				12		5		8		1		96	1.3	211	1.1	*typhimurium v cop*
1																				38	39	0.5	88	0.5	*weltevreden*
	1						1											2			10	0.1	29	0.2	*worthington*
48	147	111	35	128	175	26	483	17	20	2	97	–	96	43	5	58	61	493	14	160	6,616	86.7	16,196	87.3	TOTAL
3	14	17	21	50	19	–	77	–	1	4	5	84	14	3	1	7	3	40	14	16	1,012		2,357		ALL OTHER*
51	161	128	56	178	194	26	560	17	21	6	102	84	110	46	6	65	64	533	28	176	7,628		18,553		TOTAL

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

SEROTYPE	REPORTING CENTER																									
	ALA	ALK	ARI	ARK	CAL	COL	CON	DEL	DC	FLA	GA	HAW	IDA	ILL	IND	IOW	KAN	KY	LA	MD	MAS	MIC	MIN	MIS	MO	NEB
adelaide					1																					
agona	7			19	6	4	5							20		4			6	13		17	7			
alachua					1		1																			
albany					4		1							1							1				1	
allandale	1																									
amsterdam				1	1																					
atlanta											11															
azteca																										
bahrenfeld																					1					
belem																										
benfica												2														
berlin			1																							
berta			3		1										2	1										
binza					2									1									1			
bispebjerg																						1				
bornum											1															
bovis-morbificans							2			1											1				2	
bradford																										
brandenburg																										
bukavu																						1				
california																			2							
canoga															1											
cerro										3	1	2								1						
cholerae-suis																										
coleypark																					1					
daytona																										
denver																										
drypool					2																					
dublin					6																					
duesseldorf										2																
edinburg	1																									
eimsbuettel			1							1				2					1		1					
elisabethville												1														
florida											1															
gaminara	1			1															1							
grumpensis												1														
habana																			1		2					
haifa																										
hartford	1									1	3			1		1										
heilbron												1														
hvittingfoss																						1				
ibadan				1																						
inverness																										
irumu																									2	
ituri					1																					
johannesburg										1													2			
kaapstad																			1							
kentucky			1		2						1															
kottbus	2										9			3	1	1		1		6	5	5			1	
larochelle				1																						
lexington			2							2																
lindenburg																										
lomita			1	1																						
london				1	1		1				1	1		7												
luciana																									1	
madelia										1												1				
matadi																			1							
meleagridis					1	1																				
minnesota										1	2					1		1	1	1		1				
mishmar-haemek																1										
missouri																										
molade										1																
muenster							1				1															
new-brunswick				6																						
nienstedten																										
norwich	1			2													3		1					1	2	
ohio					2														1							
orion																										
oslo												8														
paratyphi A											1												1			
pensacola	1										3															
pomona														1												
poona			5		1		1			2	1		1	2			1		1		3					
potsdam														1												
redlands																				1						
riogrande																										
rubislaw	1			1						2						1										
saphra																										
shipley																		1								
siegburg					4					1									1							
simsbury					2			1																		
stanley							1							1												
taksony														1												
tallahassee										1					1											
uganda										1				2												
urbana	1						1												1		1	1				
victoria																										
virchow					1									1												
weslaco																									1	
TOTAL	17	–	14	34	39	5	14	1	–	21	36	16	1	44	5	10	4	3	19	22	16	28	11	1	10	–
NOT TYPED*	–	14	–	16	1	–	–	–	40	–	1	–	–	2	–	1	–	–	–	1	–	1	–	20	1	7
TOTAL	**17**	**14**	**14**	**50**	**40**	**5**	**14**	**1**	**40**	**21**	**37**	**16**	**1**	**46**	**5**	**11**	**4**	**3**	**19**	**23**	**16**	**29**	**11**	**21**	**11**	**7**

*SEE TABLE V-A

TABLE II – Continued

REPORTING CENTER																							TOTAL	CUML. TOTAL	SEROTYPE
NEV	NH	NJ	NM	NYA	NYB	NYC	NC	ND	OHI	ORE	PA	RI	SC	SD	TEN	TEX	UTA	VT	VA	WAS	WIS	WYO			
																							1	1	*adelaide*
		6					12				39				1	3			1		6		176	325	*agona*
																							2	7	*alachua*
											2					1							11	35	*albany*
																							1	1	*allandale*
																							2	2	*amsterdam*
															1								12	17	*atlanta*
					1																		1	1	*azteca*
																							1	1	*bahrenfeld*
																1							1	1	*belem*
																							2	2	*benfica*
																							1	1	*berlin*
														1					1		1		10	36	*berta*
																1							5	8	*binza*
																							1	1	*bispebjerg*
																							1	2	*bornum*
					1	1					4												12	20	*bovis-morbificans*
																					1		1	1	*bradford*
																				1	1		2	6	*brandenburg*
																							1	1	*bukavu*
															1								3	10	*california*
																							1	1	*canoga*
					2																		9	16	*cerro*
					1								1									1	3	12	*cholerae-suis*
																							1	3	*coleypark*
																				1			1	1	*daytona*
																1							1	1	*denver*
							1									1					2		6	9	*drypool*
																							6	17	*dublin*
																							2	8	*duesseldorf*
																							1	1	*edinburg*
											1					1				2	1		11	21	*eimsbuettel*
																							1	1	*elisabethville*
																							1	1	*florida*
													1			10							14	24	*gaminara*
																							1	3	*grumpensis*
																1							4	11	*habana*
						1																	1	1	*haifa*
									1										1				9	22	*hartford*
																							1	5	*heilbron*
																							1	2	*hvittingfoss*
																2							3	7	*ibadan*
																1							1	2	*inverness*
																							2	2	*irumu*
																							1	1	*ituri*
														2									5	11	*johannesburg*
											6												7	11	*kaapstad*
					1										1	2							8	25	*kentucky*
		1			1		2				6		1		3				5				53	154	*kottbus*
																							1	1	*larochelle*
																1							5	6	*lexington*
		1																					1	1	*lindenburg*
																							2	3	*lomita*
						1	2								3	6			1				25	57	*london*
																							1	1	*luciana*
																1	2						5	6	*madelia*
																							1	3	*matadi*
																2							4	16	*meleagridis*
		1			1											5							15	24	*minnesota*
																							1	1	*mishmar-haemek*
					1																		1	2	*missouri*
																							1	2	*molade*
					3																		5	22	*muenster*
																							6	34	*new-brunswick*
																					1		1	1	*nienstedten*
															1	2							13	23	*norwich*
																							3	9	*ohio*
																2							2	2	*orion*
																							8	13	*oslo*
																2							4	6	*paratyphi A*
																							4	8	*pensacola*
																1							2	3	*pomona*
					1			2								12			1	1			35	78	*poona*
																							1	4	*potsdam*
																							1	1	*redlands*
																2							2	2	*riogrande*
																4							9	17	*rubislaw*
																5							5	6	*saphra*
																							1	1	*shipley*
		4													2	3							15	41	*siegburg*
																							3	3	*simsbury*
																				1	1		4	7	*stanley*
																							1	3	*taksony*
																							2	13	*tallahassee*
																							3	10	*uganda*
							2		1	1					1	1							11	23	*urbana*
																		1					1	1	*victoria*
											9									1	1		14	19	*virchow*
																1							1	1	*weslaco*
–	–	13	–	–	13	3	19	2	2	1	67	–	3	3	14	75	2	1	10	7	15	1	622	1,382	TOTAL
1	11	–	84	150	–	2	–	–	–	2	–	22	–	–	–	2	1	–	–	–	7	3	390	975	NOT TYPED*
1	**11**	**13**	**84**	**150**	**13**	**5**	**19**	**2**	**2**	**3**	**67**	**22**	**3**	**3**	**14**	**77**	**3**	**1**	**10**	**7**	**22**	**4**	**1,012**	**2,357**	**TOTAL**

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

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum		1	2				3	12		3	15
bareilly							–	5		4	9
blockley	1						1				–
braenderup							–				–
bredeney	1				1		2	2		4	6
chester		1					1				–
cholerae-suis v kun			2				2				–
cubana							–			5	5
derby			6				6				–
enteritidis			1				1				–
give		2					2				–
heidelberg		7		1		1	9			1	1
indiana							–				–
infantis	1					1	2	3		1	4
java							–				–
javiana							–				–
litchfield							–				–
livingstone							–				–
manhattan							–	1		1	2
miami							–				–
mississippi							–				–
montevideo							–	1		7	8
muenchen				6		2	8			1	1
newington							–				–
newport						5	5				–
oranienburg							–	2		5	7
panama							–				–
paratyphi B							–				–
reading		2		1			3				–
saint-paul		1					1				–
san-diego		3				1	4				–
schwarzengrund							–	9		1	10
senftenberg							–			2	2
tennessee							–	3			3
thompson	2						2				–
typhi							–				–
typhimurium	4	1	6	56	1	11	79			4	4
typhimurium v cop				4		1	5				–
weltevreden			2				2				–
worthington	6			1			7			2	2
TOTAL	15	18	19	69	2	22	145	38	–	41	79
ALL OTHER*	3	5	5	20	–	8	41	51	–	39	90
TOTAL	**18**	**23**	**24**	**89**	**2**	**30**	**186**	**89**	**–**	**80**	**169**

*SEE TABLE IV

TABLE III – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON-MENT	HUMAN DIETARY ITEMS						MISCEL-LA-NEOUS	TOTAL	CUMU-LATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
1	6			1		1	2		27	57	*anatum*
	1						–	1	11	22	*bareilly*
							–		1	10	*blockley*
	2	1			1		2		4	14	*braenderup*
	1				1		1	11	21	36	*bredeney*
							–		1	2	*chester*
							–		2	3	*cholerae-suis v kun*
							–	1	6	33	*cubana*
	1			1			1	2	10	51	*derby*
	1						–		2	16	*enteritidis*
					1		1		3	21	*give*
							–		10	49	*heidelberg*
							–		–	3	*indiana*
1		1		1	1	1	4		11	43	*infantis*
1	6			1			1		8	28	*java*
							–		–	1	*javiana*
	2						–		2	9	*litchfield*
							–		–	7	*livingstone*
1	1						–		4	24	*manhattan*
							–		–	–	*miami*
							–		–	–	*mississippi*
	2						–		10	52	*montevideo*
1							–	1	11	17	*muenchen*
							–	1	1	2	*newington*
	3			4			4	1	13	58	*newport*
	1						–		8	32	*oranienburg*
							–		–	2	*panama*
	1						–		1	13	*paratyphi B*
							–		3	5	*reading*
3	1	1		1	1	11	14	1	20	70	*saint-paul*
							–		4	7	*san-diego*
							–		10	18	*schwarzengrund*
			5				5		7	57	*senftenberg*
							–		3	30	*tennessee*
		1				1	2		4	22	*thompson*
							–		–	2	*typhi*
10	4				1	1	2	6	105	217	*typhimurium*
	1						–		6	17	*typhimurium v cop*
							–		2	2	*weltevreden*
							–		9	19	*worthington*
18	34	4	5	9	6	15	39	25	340	1,071	TOTAL
3	10	–	–	4	1	8	13	36	193	629	ALL OTHER
21	**44**	**4**	**5**	**13**	**7**	**23**	**52**	**61**	**533**	**1,700**	

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

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
agona						2	2	3			3
amager							–	1			1
berta				3			3				–
binza							–			5	5
brandenburg						1	1				–
cerro							–	6			6
champaign							–			1	1
cholerae-suis			5				5				–
denver						1	1				–
drypool							–	6			6
dublin				12			12				–
eimsbuettel							–	14		5	19
goeteborg				1			1				–
habana							–	1		3	4
jamaica							–				–
johannesburg							–	1		1	2
kaapstad						1	1				–
kentucky							–	3		4	7
lexington							–			3	3
london							–			1	1
manila							–			1	1
matadi							–				–
meleagridis		2					2	1		3	4
molade							–			1	1
orion							–			1	1
oslo				3			3				–
poona							–				–
pullorum	3					1	4				–
rubislaw							–				–
siegburg							–	6		8	14
sundsvall		1				1	2				–
taksony							–				–
thomasville							–			2	2
urbana							–				–
virchow							–				–
wassenaar							–				–
weston							–				–
TOTAL	3	3	5	19	–	7	37	42	–	39	81
NOT TYPED*	–	2	–	1	–	1	4	9	–	–	9
TOTAL	**3**	**5**	**5**	**20**	–	**8**	**41**	**51**	–	**39**	**90**

*SEE TABLE VB

TABLE IV – 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
							–	3	8	12	*agona*
							–		1	1	*amager*
							–		3	10	*berta*
							–		5	14	*binza*
							–		1	1	*brandenburg*
							–		6	29	*cerro*
							–		1	1	*champaign*
							–		5	38	*cholerae-suis*
							–		1	1	*denver*
							–		6	24	*drypool*
							–		12	12	*dublin*
							–		19	64	*eimsbuettel*
							–		1	1	*goeteborg*
	1						–		5	11	*habana*
	1						–		1	1	*jamaica*
	1						–		3	22	*johannesburg*
							–		1	1	*kaapstad*
							–		7	30	*kentucky*
	1						–		4	6	*lexington*
				2			2		3	3	*london*
							–		1	19	*manila*
	1						–		1	2	*matadi*
							–		6	14	*meleagridis*
							–		1	1	*molade*
							–		1	8	*orion*
							–	1	4	4	*oslo*
2							–		2	16	*poona*
							–		4	11	*pullorum*
						1	1		1	2	*rubislaw*
							–		14	40	*siegburg*
							–		2	2	*sundsvall*
							–	1	1	1	*taksony*
							–		2	24	*thomasville*
	2						–		2	11	*urbana*
	1						–		1	1	*virchow*
	1						–		1	1	*wassenaar*
					1		1		1	1	*weston*
2	9	–	–	2	1	1	4	5	138	524	TOTAL
1	1	–	–	2	–	7	9	31	55	105	NOT TYPED
3	**10**	**–**	**–**	**4**	**1**	**8**	**13**	**36**	**193**	**629**	**TOTAL**

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

A. HUMAN SOURCES

REPORTING CENTER	GROUP													TOTAL
	B	C	C1	C2	D	E	E1	E2	E3	F	G	I	UNK	
ALASKA	11			1	2									14
ARKANSAS	3		3	5	4			1						16
CALIFORNIA													1	1
DISTRICT OF COLUMBIA	25		1	1	2								11	40
GEORGIA			1											1
ILLINOIS			1										1	2
IOWA		1												1
MARYLAND	1													1
MICHIGAN													1	1
MISSISSIPPI	9		1	4	1						4		1	20
MISSOURI	1													1
NEBRASKA	5		1		1									7
NEVADA							1							1
NEW HAMPSHIRE	7			1	1	1							1	11
NEW MEXICO	39		26	13	3	2							1	84
NEW YORK – A	21	8		35	1							1	84	150
NEW YORK – C	2													2
OREGON	1		1											2
RHODE ISLAND	7	1	1	3	5								5	22
TEXAS				2										2
UTAH					1									1
WISCONSIN	3												4	7
WYOMING						2							1	3
TOTAL	**135**	**10**	**36**	**65**	**21**	**5**	**1**	**1**	**–**	**–**	**4**	**1**	**111**	**390**

B. NON-HUMAN SOURCES

REPORTING CENTER	GROUP													TOTAL
	B	C	C1	C2	D	E	E1	E2	E3	F	G	I	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT				1									3	4
ANIMAL FEEDS									9					9
WILD ANIMALS AND BIRDS	1													1
REPTILES AND ENVIRONMENT			1											1
HUMAN DIETARY ITEMS	2			6									1	9
MISCELLANEOUS	10		2	9	3	5				1			1	31
TOTAL	**13**	**–**	**3**	**16**	**3**	**5**	**–**	**–**	**9**	**1**	**–**	**–**	**5**	**55**

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

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3F1824373