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REPORT NO. 25 JUNE 8, 1964

COMMUNICABLE DISEASE CENTER

ALMONELLA

TABLE OF CONTENTS

For Month of June 1964

- I. SUMMARY
- II. REPORTS OF ISOLATIONS FROM THE STATES
- **III. CURRENT INVESTIGATIONS**
- IV. REPORTS FROM STATES
- V. SPECIAL REPORTS
- VI. INTERNATIONAL

U.S. Department of Health, Education, and Welfare/Public Health Service

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, lowa, 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 to: Chief, Salmonella Surveillance Unit, Communicable Disease Center, Atlanta, Georgia, 30333.

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Dr. U. Pentti Kokko, Chief Dr. Philip R. Edwards, Chief Dr. William H. Ewing, Chief During April, reports of 1,882 isolations of salmonellae from humans were submitted for an average weekly total of 375. A total of 589 non-human isolations were reported, representing the greatest number reported in a single month.

A <u>Salmonella heidelberg</u> alert is given. Reports under Current Investigations include preliminary data concerning an outbreak of <u>S</u>. <u>heidelberg</u> in Utah, and a summary of an outbreak of <u>S</u>. <u>derby</u> infection within an institution for mentally deficients.

Included in this month's Reports from States are an outbreak of <u>S</u>. <u>senftenberg</u> affecting 150 of 300 banquet guests, <u>S</u>. <u>munchen</u> gastroenteritis probably traced to an Easter chick, a summary of non-human salmonella isolates in New York, osteomyelitis due to <u>S</u>. <u>saint-paul</u>, and a suspected relapse in a case of salmonelia gastroenteritis.

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Surveillance Unit at the C.

A review of salmonellosis in Israel (1948-1962) and a preliminary report of an outbreak of typhoid fever in Aberdeen, Scotland, are presented in the section on International Reports.

II. REPORTS OF ISOLATIONS FROM THE STATES

A. Human

During April, 1,882 isolations of salmonellae were reported, representing an average weekly total of 375 (an increase of 56 over March). The curves presented in Figure 1 show average weekly totals for each month and demonstrate similar patterns for January through April during 1963 and 1964. Thus fer, 1964 has shown an increase of 1,773 isolations (40 per cent) over the 4,431 reported during 1963.

The seven serotypes reported most frequently during April were:

D		a a contration	Taria Lanaa maa l	Rank
Rank	Serotype	Number	Per Cent	Last Month
1	S. typuimurium	430	22.8	1
2	S. derby	399	21.2	nt an 2
4	S. heidelberg	152	8.1	s bomin30 stor
5	S. infantis	80	4.3	Lollingt our
6	S. newport	75	4.0	5
7	S. oranienburg	58	dano da 3.1 anod fab	hed . a
· · · · ·	S. enteritidis	54	2.9	od anter south
		1,248	66.3	

Total salmonellae isolated (April) 1,882

Of the 62 different serotypes reported during April, the seven most common (11.3 per cent) accounted for 66.3 per cent of the 1,882 isolations reported. With the exception of <u>S</u>. <u>enteritidis</u>, the serotypes on the above list appeared on last month's list and in the identical order. The percentage of <u>S</u>. <u>derby</u> isolations decreased slightly during April from the previous month's figure of 22.7 per cent to 21.2 per cent.

The family attack rate for this month, 20.0, is that which would be expected based on past experience (Table II).

The age and sex distributions for individuals from whom salmonellae were isolated were consistent with past experience (Table IV).

B. Nonhuman

The 589 salmonella non-human isolations reported in April are a consider able increase from the 365 reported in March and represent the greatest number reported in a single previous month. As in March, 44 serotypes were identified of which 36 were the same types. Two unusual types <u>S</u>. <u>blukwa</u> and <u>S</u>. <u>zehlendorf</u> were isolated from zoological specimens in Michigan.

The seven most common types reported for April are as follows:

Asports from States are an outbreak of

No.	Serotype	Number	Per Cent	Standing Last Month
1	S. typhimurium			
	S. typhimurium	(301-1961)	21 05	Adda of the subserved the
	var. copennagen	124	21.05	-
2	S. pullorum	entres 10.252 e	8.83	0
3	S. heidelberg	50	8.49	3
4	S. anatum	45	7.64	7
5	S. montevideo	29	4.92	5
6	S. derby	22	3.74	2
7	S. infantis	21	3.57	4
		343	58.24	

These seven types account for 58.2 per cent of the total. All of them were listed as the most common types in March. This is not often observed with non-human isolates, one or more types usually being replaced in the list from month to month.

The 4 species from which most of the isolates were obtained in order of frequency are: chicken 210 (35.7 per cent), turkeys 145 (24.6 per cent), porcine 83 (14.1 per cent), and bovine 58 (9.9 per cent). Altogether these sources account for 84.2 per cent of the total number.

As in February and March the greatest percentage of swine isolates were obtained at a packinghouse in Maryland. The majority of the isolates were identified as S. anatum and S. derby.

S. <u>heidelberg</u> although consistently isolated from fowl was reported from bovine, porcine, laboratory monkey and hamster sources this month.

URRENT INVESTIGATIONS .1 (ling&) betalosi salisnomias intoi

A. An Outbreak of Gastroenteritis due to <u>S. heidelberg</u>. Dr. G. D. Carlyle Thompson, Director of Public Health, Dr. Elton Newman, Director, Division of Preventive Medicine and Dr. Alton A. Jenkin^S, Director, Communicable Disease Section, Utah State Department of Health, Dr. Paxton Howard Jr., E.I.S. Officer, Mr. James Goldsby, Statistician, C.D.C., and Dr. Kenneth D. Quist, Veterinary Officer, C.D.C.

During March and April, an abnormal number of <u>Salmonella heidelberg</u> isolations was reported to the Utah State Health Department and the Salmonella Surveillance Unit at the C.D.C. All but four isolations of this type were reported from Salt Lake and Davis Counties. Since the beginning of 1964, 88 stool cultures were confirmed as <u>S</u>. <u>heidelberg</u> in the State Laboratory, 85 occurring in March and April. The normal incidence of this serotype in Utah is about one per month.

An investigation during early May revealed the following preliminary results. Fifty of the persons were females and all ages were involved, with a predominance in 1-9 year-old males and 20 to 40 year-old females. An epidemic curve constructed on the basis of dates of onset for 52 symptomatic cases suggested two periods of introduction of the organism into the community The first peak occurred in late March and the second in mid-April. Of the 66 patients contacted thus far, 11 were epidemiologically associated with a sorority luncheon held on April 11, 7 were linked to commercially prepared eclairs bought in two local bakeries, 5 were believed to be associated with 4 different restaurants or cafeterias, 2 were probably hospital-acquired and 41 could not be traced to a specific source.

Further epidemiological studies are presently in progress and a complete report will be presented in a later issue.

Suspected Relapse of Gastroont

history well not indicative of a source.

contact, or who lived in the one building on

B. Investigation of an Outbreak of Pospital acquired Salmonellosis due to <u>Salmonella derby</u> in an Institution for Mentally Deficients. Dr. Mila Rindge, Connecticut Region No. 1 Health Director; Dr. James C. Hart, Connecticut State Epidemiologist; Dr. Herbert Flynn, Medical Director, Mansfield State Training School; and Dr. Palmer Beasley, EIS Officer.

The Mansfield State Training School is an institution for mentally deficients located in Mansfield, Connecticut, approximately 30 miles from Hartford. The institution provides chronic care and rehabilitation for approximately 1,850 patients of all ages, who are housed in 18 buildings. One of these buildings also serves as a hospital for acute illness, and place of initial evaluation for all new patients.

On August 8, 1963, an apparently healthy 13 month old girl was admitted to Ward II of the hospital from her home. On August 12, she developed mild diarrhea and a stool culture revealed <u>Selmonella derby</u>. Her symptoms lasted only a few days, and all subsequent cultures were negative. Raw eggnogs had been part of the regular diet for all patients difficult to feed, including this patient. Consequently, eggnogs and soft cooked eggs were deleted from all diets. Subsequent to this an evaluation was made of the hospital chicken flock. For a combination of reasons all birds were destroyed and the hen houses thoroughly cleaned.

No other cases of diarrhea developed, but fearing spread, cultures were taken from the other patients in the hospital. By February 26, 1964, <u>S</u>. <u>derby</u> had been isolated from the stools of 43 of 133 patients in the hospital (32.4 per cent), all of whom were symptomless.

distancery Report: Salmonella dorby Lefectic

Rectal cultures were obtained from all 1,855 patients on February 26, 27, 1964. Salmonellae were isolated from 17 patients not previously known to be carrying these organisms, making a total of 65 involved patients, all but the first of whom had never manifested signs or symptoms of gastroenteritis. S. derby accounted for 63 of these while S. oranienburg and S. heidelberg

was Cound mostfive for S. darby (See Current Invistigation)

accounted for one each. The 63 patients carrying <u>S</u>. <u>derby</u> were located in nine of the 18 buildings. Forty-eight of the 63 patients were from the hospital. All other <u>S</u>. <u>derby</u> isolates were from patients who had had contact with the hospital either as patient employees, inadvertant direct contact, or who lived in the one building physically connected to the hospital.

S. derby isolations among patient employees showed the following carrier rates: hospital ward aides 11.4 per cent, hospital kitchen 6.3 per cent, hospital laundry 0. The results of a survey of the regular hospital employees have not been reported. No source of introduction was discovered.

Of considerable interest is the fact that only one of the 63 patients had any symptoms. Repeat cultures of the institution are planned to help characterize the pattern of spread of this organism.

or cafaterias. 2 were provably hospital-acquired and 6

State Epidemiologias; Dr. Herbart Flynn, Medical

V. REPORTS FROM STATES

and A.oo California and al vinesently in programming Ca.A lan

Suspected Relapse of Gastroenteritis due to <u>Salmonella michigan</u>. Reported by Dr. Philip K. Condit, Chief, Bureau of Communicable Diseases, California Department of Public Health, and Dr. George Perlstein, EIS Officer assigned to the State of California.

thread to a specific source.

. outed in a later famous in

A boy, his parents and a pet dog traveled to Mexico in March, 1964. One day following the arrival of the group in Mexico, the boy suffered from an illness characterized by fever, vomiting, dehydration, and diarrhea, requiring hospitalization for four days. On the same date, the patient's mother also suffered from mild diarrhea. No cultures were taken and treatment history was not available. On April 1, the family returned from Mexico and on April 13 the boy was again hospitalized with symptoms of diarrhea. Stool cultures at this time were positive for <u>Salmonella michigan</u>. Cultures taken from the mother, father and pet dog had been negative, and recent food history was not indicative of a source. The doctor speculated that the patient may have suffered a recrudescence of the disease.

Editor's Comment: Although recurrent or chronic diarrhea following acute gastroenteritis caused by salmonellae are infrequent, such instances are well documented. Such a course cannot be documented in this patient; however, it is a distinct possibility.

Preliminary Report: <u>Salmonella derby</u> Infection Within an Institution for Retarded Children. Reported by Dr. James C. Hart, Director, Preventable Diseases Division, Connecticut State Health Department and Dr. Charles F. Dyer, New London Department of Health, New London, Connecticut.

Between February 28 and May 5, 1964, <u>Salmonella derby</u> was isolated from stool cultures of 38 patients in an institution for retarded children. None of the patients were clinically ill. The presence of asymptomatic <u>S</u>. <u>derby</u> infection within the institution was discovered during culture surveys performed shortly after a patient recently transferred to another institution was found positive for <u>S</u>. <u>derby</u> (See Current Investigations B).

-4-

All children harboring S. derby were isolated and placed on strict enteric disease precautions. A ten-day course of chloramphenicol was given.

dichen. The investigation is c In addition to patient isolation and therapy used as a method of control, an educational program aimed at improved personal hygiene for personnel and mildly retarded residents was conducted, restrictions were placed on the methods of cooking eggs and poultry, and housekeeping procedures were closely scrutinized. The source of the outbreak could not be determined.

The status of the 38 cases treated with chloramphenicol is:

- 1. Three have had 3 successive negative stool cultures and can be
- presumed to be non-carriers. Variant to said and the . alcalifitiated 2. Six have had 2 consective negative stool cultures with the results of the third still pending. ment shatts and ylop (incer blues and the
- 3. Fourteen have had 1 negative stool culture. Tagizorgan bertuand dollar
- 4. One died of pneumonia.
- 5. Fourteen have positive specimens. i for al dl indomed a month?

carrier of 5. saint naul. It would In most of these cases, reports of cultures taken after treatment have not been received or there has not been a sufficient time interval since the treatment was terminated to submit a specimen. mori bessiver ad and emaining to

Editor's Comment: It is not possible at this point to ascribe more than a fortuitous relationship between this institution and the one involved in the outbreak described under Current Investigations. Both the above outbreak and the one described under Current Investigations may have had their onset during the early part of the outbreak of hospital-associated infections due to S. derby. The frequency with which asymptomatic infection occurs in this large interstate outbreak often preclude, ascribing definite dates of onset

Two points related to the above outbreak are noteworthy. First, the routine use of chloramphenicol in the therapy of asymptomatic cases of salmonellosis is to be discouraged. As is well documented in the past and illustrated in this outbreak, such practice at best yields poor results. Secondly, the contention that three consecutive negative stool cultures is presumptive evidence that a bowel is free of salmonellae is debatable.

C. Illinois

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s reduced had a bad odor and persistent that halfs

Preliminary Report: An Outbreak of Gastroenteritis due to S. Senftenberg. Dr. Olga Brolnitsky, Epidemiologist in charge of the Bureau of Communicable Diseases, Dr. Herbert Slutsky, Junior Epidemiologist and Dr. Samuel Andelman, Health Commissioner, Chicago Board of Health.

Of approximately 300 guests participating in two separate banquets in a Chicago hotel on May 16, more than 180 became ill with gastroenteritis. Typical symptoms were fever, diarrhea, abdominal pain, nausea and vomiting. Eight guests had illnesses severe enough to require hospitalization. Onsets of illness occurred from 10 to 48 hours following the banquets.

Epidemiological and laboratory studies have revealed that the etiologic . agent was <u>Salmonella</u> senftenberg. Of a number of guests cultured, 16 were

-5-

positive for S. senftenberg. Ten food handlers were also positive for that serotype as were cultures taken from a meat slicer and chopping block in the hotel kitchen. The investigation is currently in progress and a complete report will be presented in a future S.S.R. orrest sized at improved personal bygions for personal and

D. Michigan and state anothiniter , betauboos saw atmability cons and poultry, and housekeeping procedures were closely

Salmonella saint-paul Isolated from a Gall Bladder. Reported by Dr. D. B. Cochon, Epidemiologist, and Dr. George Sweda, Michigan Department of Health.

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A cholecystectomy was performed on a 50-year-old female for chronic cholelithiasis. At the time of surgery one large gall stone was removed. Routine cultures from the gall bladder revealed Salmonella saint-paul. The patient could recall only one attack compatible with gall bladder disease, which occurred approximately 20 years prior to surgery.

Editor's Comment: It is not known whether this patient was a chronic fecal carrier of S. saint-paul. It would have been most interesting to determine whether cholecystectomy alleviated the carrier state. For although in some patients carrying salmonellae exclusive of Salmonella typhi, the organisms can be isolated from the gall bladder, this is by no means invariably the case. More information is needed to determine whether the chronic carrier state of salmonella other than S. typhi is associated with gall bladder disease or whether in fact; more often the chronic carrier state represents an alteration in the enteric flora of the patient.

> by pure of the outbreak of headital-associated frequency with which asymptometic infection

Ventinellen may

E. <u>Minnesota</u>

Gastroenteritis due to Salmonella munchen. Reported by Dr. R. N. Barr, Executive Officer, and Dr. Leslie P. Williams, Jr., Senior Veterinary Officer, Minnesota State Department of Health.

Following the findings of Salmonella munchen in Easter ducklings, a case of gastroenteritis in a 12-year-old male due to S. munchen was investigated. It was found that one week prior to the onset of symptoms, the patient and his brother had purchased a green Easter chick. The day following the purchase, the bird died. The mother of the patient stated that the chick had had a bad odor and persistent diarrhea before death. The carcass had been burned and no samples could be obtained.

F. New York Beport: An Outbreak of Gastronnerities Manary Report:

ogsold3 .zon

Non-Human Salmonella Isolates, New York State Veterinary College, 1963. Reported by Dr. D. W. Bruner, New York State Veterinary College, Cornell University.

terborg. Dr. Olga Broinitsky, Epidemiologiat

Listed on the next page are the sources of 100 non-human salmonella isolates which were typed by the New York State Veterinary College during

.. an hours following the banquets.

Salmonella	Chickens Ducks Turkeys Pigeone
typhimurium pullorum infantis enteritidis choleraesuis	7 37 37 37 37 37 37 37 37 37 37 37 37 37
montevideo	3
thompson	3
newport	1 AVIAR MALLANE
saint-paul	2 Z
heidelberg	1 AAAAA SINCIPPIGA BAINNESS
derby california bredeney	The incidence of <u>Salmonells bailabers</u> inferies. In react weeks has been cause for B ore module. Involved are the Rocky Mountain and Paulifo Generated 1
oregon anatum give gege	 An outbreak striburad to this sprotype is itsic. Investigation (See Cur. Labort.) off evidance that its possible involvement of ctiper western States. The relations from energy the total salponelles isolated is involved by Mantana, Vyoming. Colorado, New Manico and strikes and the Nestern States.

* 4-variants. ** var.Kunzendorf.

G. <u>Tennessee</u>

Osteomyelitis due to <u>Salmonella saint-paul</u>. Reported by Dr. Robert Hutcheson, Jr., and Dr. John L. Lentz, Director of Health, Davidson County, Tennessee.

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Jan. Peb.

Entire U.S.

On April 21, 1963, a 5-month-old white male (said to be of American-Indian extraction) was hospitalized for diarrhea, fever, and a tender, immobile lower extremity. Symptoms had been present for less than 24 hours. Two blood cultures taken shortly after admission were positive for <u>Salmonella</u> <u>Saint-paul</u>. The infant was diagnosed as having osteomyelitis of the right femur. His illness responded to chloramphenicol, staphcillin and penicillin. Because of the association of salmonella osteomyelitis with certain hemoglobinopathies (especially types SC and SS), hemoglobin electrophoresis was performed and type AA was found.

+ TGM

The infant had been fed evaporated milk mixed with approved city water that was tested and found negative for lactose fermenting bacteria, and food which was prepared only by the mother and consisted of a variety of table and baby foods. The three-member family lived in a trailer along side a stagnant creek. The trailer's sewer line was intact and connected to a city sanitary sewer. The family had no pets. Stool cultures taken from both parents were negative for salmonellae.

Six stools were collected from the infant after his discharge from the hospital. One was positive for <u>S. saint-paul</u>.

Editor's Comment: In this report it is noteworthy that even though the patient's clinical illness consisting of symptoms of septicemia and osteomyelitis responded to the therapy given, the stool was positive for S. saintpaul after the patient was discharged from the hospital. Reasons as to why a systemic illness with salmonella may respond to antibiotic therapy while at the same time persistent colonization occurs within the gastrointestinal tract remain obscure.

V. SPECIAL REPORTS

Salmonella heidelberg ALERT

The incidence of <u>Salmonella heidelberg</u> infections in the western States in recent weeks has been cause for some concern. The states presently involved are the Rocky Mountain and Pacific Coast States.

An outbreak attributed to this serotype in Utah is currently under investigation (See Cur. Invest.) and evidence thus far compiled indicates the possible involvement of other western States. The percentage of S. heidelberg isolations from among the total salmonellae isolated in western States -Montana, Wyoming, Colorado, New Mexico and states further west - the entire U.S., and the U.S. exclusive of the western States this year has been:

Western States	<u>Jan.</u> 10.6	Feb. 5.4	Mar. 23.9	<u>Apr.</u> 24.9	May (1st 3 weeks, 24.7	'
Entire U.S.	7.1	4.8	6.7	8.1	10.5	
U.S. exclusive of Western States	-paul. Ra	4.7	etoniaR o	t sub elti		

Therefore, it is felt important to acquire follow-up information on persons in these states with S. heidelberg infections as soon as they are identified. If a food source sold in interstate commerce is responsible, it should be identified as soon as possible. Anod cultures taken shortly after admission wars positive for 2

Please forward any and all information to the Salmonella Surveillance Unit. and das alliances looined to chlorespherical, stapped as all and

Distance of the association of saimonella estacementitie with certain, heavelobin quithes (especially types SC and SS), hereglobin electropherests INTERNATIONAL ver performed and type AA was found.

A. Salmonellosis in Israel (1948-1962). Submitted by Dr. W. Hirsch, Director, Central Laboratory, Haifa, Israel. variaty of table it to be propared only by the mother and consisted of a

Between 1948 and 1962, 7,700 isolations of salmonellae exclusive of S. typhi and S. paratyphi A, B, and C were detected by the Central Laboratory, Kupat Holim, Haifa, Israel. Ten serotypes accounted for 79 per cent of the total. On the next page are listed the 10 most common serotypes isolated from human sources between 1952 and 1962. Six stools were collected from the infant after his discharge from

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Ten	Most	Prevale	nt Salm	onella	Serotypes	Isolated
	from	Human S	ources,	Israel	(1952 -	1962).

	Serotype	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u> 1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	1959	1960	1961	1962	Total	Per Cent of Total
s.	typhimurium	112	125	153	203	341	140	171	139	387	132	415	2318	49.6
S.	newport	139	36	41	151	29	14	24	27	20	23	12	516	11.0
s.	braenderup	-	4	1	47	74	51	58	35	38	20	24	352	7.5
S.	montevideo	3	10	13	27	46	23	23	20	20	16	20	221	4.7
S.	enteritidis	36	22	12	13	7	23	34	21	19	31	26	244	5.2
5.	hadar	2	-	2	16	71	93	12	1	21	3	14	235	5.0
5.	emek	3	8	4	3	19	34	30	35	32	20	27	215	4.6
ð.	meleagridis	21	12	43	15	17	11	9	29	6	7	15	185	4.5
ð.	tennessee	-	5	2	64	45	14	18	49	5	10	7	219	4.7
٥.	Infantis	-	-	-	8	28	26	16	31	41	9	15	174	3.7
													40/9	100.0

B. Outbreak of Typhoid Fever in the United Kingdom. Reported by Dr. Joe Stockard, Assistant Chief for Epidemiology and Immunization, Division of Foreign Quarantine, U.S.P.H.S., Washington, D.C.

The division of Foreign Quarantine in Washington reports an outbreak of typhoid fever in Aberdeen, Scotland. As of May 31, there were 160 confirmed and 49 suspect cases officially reported. A later unofficial report indicated that there were 241 confirmed and 30 suspect cases. The organism has been identified as <u>Salmonella typhi</u>, phage type 34, an extremely rare organism. The source is thought to have been contaminated canned corn beef, which may have contaminated a meat slicing machine and thus, a variety of other cold meats. Secondary cases are reported to be occurring at present. Public schools have been closed temporarily, and travelers are cautioned not to travel to Aberdeen unless it is strictly necessary, and if this is the case, immunization should be obtained.

In the May 29 issue of the <u>London Times</u>, the first death due to the outbreak was reported to have occurred in the Aberdeen City Hospital, the victim being an elderly spinster who was also suffering from two other fairly serious illnesses.

There is no current information that any of the potentially contaminated food has been imported into the United States.

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TABLE I SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING ** APRIL 1964

REGION AND REPORTING CENTER NEW ENGLAND MIDDLE ATLANTIC EAST NORTH CENTRAL																			
SEROTYPE	MAINE	NH	VT	E N.G L	RI	CONN	TOTAL	NY-A	MIDDI NY-BE	NY-C	LAN	TIC	TOTAL	OHIO	TND	TLL	HCEI	N T R A	L
adelaide alachua amsterdam	2 20	196	IQ	01.0	1963	829	1 82		195	1926	5.5	1.2	4293	1	LND	TLL	Mich	W15	1
anatum ardwick	0 10	T.S.	22	1	38	000	1		1	100	1	° 1	4	-			2		2
atlanta baréilly berta binza blockley	0 4 0	14 00 01	23 20	2 3	12 12 12	27 35 20	2	1	200	29 1 74	10 T1 T5	2	2 2	1	1		1	1	1
branderup bredeney california		2	31.0	4	11	22	4	1	S 5	V 1	2.3	2	9	1		1			2
cerro CI		14. 1	0.05		12	33	80 12		3	19	8		1	8			1		1
cholerae-suis cholerae-suis v kun cubana denver derby		1	01	2	4	63 28	2		2	1 45 45 28	54	1	1				1		1
enteritidis	10	-	1	40 6	5	77	124	26	40	31	16	83	196	17		16	3	3	39
galiena give halmstad hartford	103%) 13.50	icipi EE	b.cz	deas 187	id fi si o	f ba triab	Untr Baga :	the the	nton Shiel	r Peve ann	1 5]	9 10 de 18 e /	23	3		1	4		8
heidelberg indiana infantis javiana johannesburg	10 11 100 1 100	10.55	103.1	rep:	* i 00	1 6	2	6 2 1 1	5	4	1 (Q)	4 4 4 1	19 4 14 2	3 2 6	4	2	4 6 1	4	17 18 7
kentucky litchfield livingstone manhattán meleagridis	noq ad ar	ha Làni hành	tal rgi	iff1) he	nau R R	207 207 208 208	1 1 1 1 2 31 1 2 21	, bi	8	bqi	icos ilis be		2	1960 1960 1883	211 2711 1871	4			4
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new-brunswick newington newport norwich oranienburg	22	021	13		725 78	2	0 15 3. 3 8 8 0 1 3	2	3	1 18-1 28-1 1	i fi	1 2 8	3 2 14	1	aga baik gbai anu	2	6	1	13
panama paratyphi B v java paratyphi B poona reading	0 1 0 10 1	ichs (sol			871 195	1 3 1	1 4 21 1	6 3 5 1	3 Boly	4 10.1 (2101) (1 013 0.03	2	16 3 5 7	1	100 100	2	1	7	11 12 3
saint-paul san-diego schwarzengrund senftenberg tennessee	100	11	13	19.35		1	1	4	3	50 TE	1	2	10 1 1	obis **	00 828	3 C 1 647 1 1	6	4	1 10 1
thompson typhi typhimurium typhimurium y cop urbana	1	2		1 12 2		1 1	8 2 24 3	1 2 22	1 3 34	2	2 1 4	2 2 1 23	4 6 7 112	6 2 14		2	12 9 3	1 3 1 6	28 18 10 65
weltevreden worthington Untypable Group B Untypable Group C-1 Untypable Group C-2		4					4	1		1000	6	4	10	1		15	2		2
Untypable Group D Untypable Group E unknown										 3(4 2)	1.00						1		1
TOTAL	2	6	1	112	6	114	241	99	119	10					3			1	-
	(New Yo * The	Beth-	- Alba Israel	ny, BI Salmon	- Beth	Israel	, C - Cit	y)	118	81	41	175	514	68	13	70	103	45	299
	** Inc	ludes	rch ar Februa	e assig Ty late	ned to repor	the re ts N.Y.	spective -B.I. and	states Delaw	ok is a r although are (Repo	reference report orted in	e labo ed by April	N.Y. by N	y and pro - B.I. .Y B.]	ocesses n	nany cu	ltures	from of	ther	

REGI							REGIO	LON AND REPORTING CENTER										
	W	EST	NOR	тн с	ENTRA	L				1	sou	лтн и	TLA	NTIC	1203			Sec. 19. 19. 19. 19. 19. 19. 19.
MINN	IOWA	M0 1	ND	SD	NEBR	KAN 1	TOTAL 2	DEL	MD	DC	<u>VA</u> 1	wv	NC	SC	GA	FLA	TOTAL	SEROTYPE adelaide alachua amsterdam anatum anatum
2						1	3		3	1	2 3		1		1 4	8	1 6 17	ardvick atlanta bareilly berta binza blockley
									2								2	branderup bredeney california cerro chester
1		1				1	3	6	2	1	1		1		1	1	1 1 12	cholerae-suis cholerae-suis v kun cubana denver derby
		1					1	1			2		1			1 1 1	4	enteritidis galiema give halmstad hartford
2						2	4		1		5 3		3 1 1		1 2 1	4 3	10 11 5	heidelberg indiana infantis javiana johannesburg
																1	1	kentucky litchfield livingstone manhattan meleagridis
3		1					4	1	1		1				1 1 1	2 3 1	2 1 7 3	miami michigan mississippi montevideo muenchen
4	1	1				1	1		2		3				3 3	4 1 3	7	new-brunswick newington newport norwich oranienburg
1 2 2		1					1 2 3	-								1	1	panama paratyphi B v java paratyphi B poona reading
2 1 6	2						2		1	1	1				4	4	5 4 8	saint-paul san-diego schwarzengrund senftenberg tennessee
6	2	1 2 5	2	5		1 5	2 2 25	1	2 2 6	1	4 12	2	2 12		12	2 20	2 10 66	thompson typhi typhimurium typhimurium v cop urbana
1							1			3 2		1		1			5 2	weltevreden worthington Untypable Group B Untypable Group C-1 Untypable Group C-2
		1					1	-		3				1			4	Untypable Group D Untypable Group E unknown
33	5	15	2	5		10	72	10	29	13	38	3	22	2	35	64	216	TOTAL

TABLE I BY SEROTYPE AND REPORTING CENTER

J.

COL S A LA STATE STATE					REGIO	N A N	DR	EPOR	TINO	CENT									
SEROTYPE	EAS	TSO	UTH	CENT	RAL	WES	TS	OUTH	CEN	TRAL	E K			MO	UNTA	IN			
adelaide alachua amsterdam anatum ardwick	KY	TENN	ALA	MISS	TOTAL	ARK	LA 2	OKLA	TEX	TOTAL 2	MONT	IDA	WYO	COLO 1	NM	ARI	UTAH	NEV	TOTAL 1
atlanta bareilly berta binza blockley	3	1	2		3				1	1									
branderup bredeney california cerro chester						1.000	1		3	4							2		2
cholerae-suis cholerae-suis v kun cubana denver derby							1												
enteritidis galiema give halmstad hartford									1	1				1					1
heidelberg indiana infantis javiana johannesburg	1	4			5	1	1		2 2 1	1 2 4 1	1	2		10		1	43		53
kentucky litchfield livingstone manhattan maleagridis						1	1			1									
miami michigan mississippi montevideo muenchen	1		2		3				1	1						1			1
new-brunswick newington newport norwich oranienburg	1	1			1		5		6	3		2		2		1	1		
panama paratyphi B v java paratyphi B poona reading	2				2		2	1	2	3	2					1			2
saint-paul san-diego schwarzengrund senftenberg tennessee	1	1	23		1 1 2 4	1				1	2						1		3
thompson typhi typhimurium typhimurium v cop urbana	3	4	1	1	9	1 4	1 12	4	1 6 2 16	2 7 3 36	2	2		8	2		3	1	2
weltevreden worthington Untypable Group B Untypable Group C-1 Untypable Group C-2						2				2					12	4	2		14
Untypable Group D Untypable Group E unknown															1 3	_			3
TOTAL	12	16	10	1	39	10	28	7	55										

1

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Number of Salmonella [sandates from and

RECION AND REPORTING CENTER PACIFIC						in d	fino9	PERCENT	FOUR	7. OF 4	1963	% OF 1963	
WASH	ORE	P	ACIFIC ALASKA	HAWAII	TOTAL	OTHER VI	TOTAL	OF TOTAL	MONTH	MONTH	4 MONTH TOTAL	4 MONTH TOTAL	SEROTYPE
28	1		1.1.4	d	1.000	N 19	10	03309	3 4	A Egal	1	Testas	adelaide 10 ()
	1.2%	1		1	1	1	1		01	1.1	68	1.5	ansterdam dis TA
	1.02	1		1	4		1		21				ardwick, Jan IA
1	ς¢	3			4		1	-	26		22		atlanta bareilly
				1	<u> </u>	-	12	1	20		16		berta e neo 5 h
	14 M	6			6		50	2.7	137 0	2.2	81	1.8	blockley
2		2			4		12	-	23		14 23		branderup bredeney
		3		1	3	-	3	1	- 2 -				california cerro
		1			1	_	2	.1	25	.4	87	2.0	chester
	1.				2.2		1		8		7	CARDING OF 1	cholerae-suis cholerae-suis v. kun
	i.				3 .		4		22		10		denver 131080
	2.0	15		5	20	-	399	21.2	1,203	19.4	141	3.2	derby protocol
	. 2	4			\$ 6		54	2.9	210	3.4	138	3.1	enteritidis galiema
		1			1		2		19	22	16		give for file
	S., S.				3		1 3		26	1	6	Brix Gall	hartford a hom.
4	3	33	3	1	- 44		152	8.1	421	6.8	334	7.5	heidelberg 8100
4	1	7		2	14		4 80	4.3	287	4.6	235	5.3	infantis javiana
	26	1			1		2		~ 2			AND AND A	johannesburg
	1				24		1		8	1	3	natione.	kentucky
	- 1				0 1	-	6		-19		19	1 10	livingstone
		4		2	6	-	8		60		32	63	meleagridis
	1.11				10		2	1	1.68	1	13	Stand of	miami
	1.	1			1	-	1		5		5	top was	mississippi
1	1.1	1		3	5		46	2.4	140	2.3 1.2	138 72	3.1 1.6	muenchen
	1.1				4		1		2		5	1960 - 2869 1	new-brunswick
		10			1		2	6.0	14	3.4	7 296	5.8	newport
	1 ¢ .	10			18		1	3.1	191	3.1	108	2.4	oranienburg
		-	1		2		9		58		21	52.	panama
		3			3		28		80 60		21 35	int para	paratyphi B
1		2					2		11		9 6	A	reading
		-			3				120	1.9	132	3.8	saint-paul
1		5 14			15	-	35	1.9	50		35 37	12:55 3:	san-diego schwarzengrund
1	1. 2	3			- 3		12	14.24	18		<u>8</u> 41	inant.	tennessee
3	-	1			3		65		110	1.8	76	1.7	thompson
3 12	1	2		1	6	-	43 46	2.3	196	3.2	235	5.3 33.6	typhi typhimurium
1	-	55		4	73	}	430 15	22.8	55		31 15	st 101 No.	typhimurium v cop urbana
	-				- 1		2		-7		8		weltevreden
		1		1	<u> 751</u>		4		24		11 72	5	Untypable Group B
	1	2	1		2 2	1	28 6	2.74.8	21		11 7		Untypable Group C-2
_	-				0		4		2.		14		Untypable Group D
1	1.				0		4		2		4 8		Untypable Group E unknown
	1				1		3		22	10			2.5%.8
	-				11	1000		Se la constante	52				de al
37	12	205	5	22	281	-0-	1,882		6,204		4,431	1.1.1	TOTAL
	2				01				36	1.1	1.0		sinisaly
					7				37				Hong to an and the second
					0 (VI - 1	irgin Islan	nds)		3				alapane W
-					12				45			ana?	and a second
					the second s								

TABLE II

Number of Salmonella Isolates from Two or More Members of the same Family - April 1964

	Total Number of	Number of Isolates	Per Cent
Reporting Center	Isolates Reported	From Family Outbreaks	of Total
Alabama	10	8	80.0
Alaska	5	1	20.0
Arizona	8	0	0.0
Arkansas	10	1	10.0
California	205	51	24.9
Colorado	27	10	37.0
Connecticut	114	17	14.9
Delaware	10	0	0.0
District of Columbia	13	3	23.1
Florida	64	15	23.4
Georgia	35	6	17.1
Hawaii	22	0	0.0
Idaho	6	2	33.3
Illinois	70	8	11.4
Indiana	13	8	61.5
Iowa	5	0	0.0
Kansas	12	4	33.3
Kentucky	12	0	0.0
Louisiana	28	13	46.4
Maine	2	0	0.0
Maryland	29	7	24.1
Massachusetts	112	24	21.4
Michigan	103	35	34.0
Minnesota	33	8	24.2
Mississippi	1	0	0.0
Missouri	15	Ō	0.0
Montana	7	0	0.0
Nevada	1	0	0.0
New Hampshire	6	3	50.0
New Jersey	41	8	19.5
New Mexico	19	9	47.4
New York 1-A	99	7	7.1
New York 2-B	118	3	2.5
New York 3-C	81	n	13.6
North Carolina	22	5	22.7
North Dakota	2	Ō	0.0
Ohio	68	8	11.8
Uklahoma	7	2	28.6
Oregon	12	- I	8.3
Pennsylvania	175	37	21.1
Rhode Island	6	0	0.0
South Carolina	2	0	0.0
South Dakota	5	0	0.0
Tennessee	16	4	25.0
lexas	55	11	20.0
Utah	52	16	30.8
Vermont	1	0	0.0
Virginia	38	12	31.6
Washington	37	7	18.9
West Virginia	3	0	0.0
wisconsin	_45_	12	26.7
Total	1,882	377	20.0

			TABLE II	II	
EXE		In	frequent Se	rotypes	
Comptone			4 Month	1963	
serocype	Center	April	Total*	Total**	Commentons agA
3. adelaide	OHIO	1	ling 4 asi	Nej o rtza	Three previous human isola- tions this year (2 from Cal. and 1 from Pa.).
S. alachua	CAL	1	0	10	9 <u>4 60</u> 9 <u>8</u> A
		nar [®] nar	91 * 153	10	First isolated from a swine holding pen in Alachua Co., Florida - 1952.
2. <u>amsterdam</u>	COLO	1	1	0	First isolation reported in the U.S. Very rare serotype.
S. ardwick	TT 7		- 03		10-19 yrs. 53
	144		1 18	0	Extremely rare serotype.
5. <u>atlanta</u>	GA	1	1	11	Highly regionalized sero- type. Seventeen of 21 CDC isolations from Fla. & Ga.
S. cerro	HAI	1	1	6	Not infrequently isolated
1		÷.	1 A		from poultry feeds. Six
10					human isolates in 1963 from
8 4					N.Y., LA. TEX. VA. & GA.
2. denver	CAL	1	30° 1	0	First isolated in 1952 from irrigation water in the
					Of 15 CDC isolations (1947-
			114	100	1958) - 8 from humans, 3 water, 3 eggs, & egg
					powder and 1 cattle.
S. galiema	-				The Lotal Jack
S. hal	L				very fare type.
a datmstad	r				First isolation in 1958 in Sweden from imported meat- flour. Very rare serotype.
2. johannesburg	C				Two 1963 isolations from
	P P			0	Cal. and N.Y.
S. michigan					
adu	C			F	first isolated in 1955 in
				t	ract of a young alligator at autopsy.
S. new-brunes				2.14	
*Reprocess				R o i L q	esponsible for a family utbreak in Va. and two solated cases in Cal. & a. in 1963. Not infre- uently isolated from dogs.
four months	and the state			llae	during the first
**n wontins	and the state of the state	Barris Contractor		. 11	duration 1062

TABLE IV

Age and Sex Distribution of 1,833 Isolations of Salmonellae Reported for April, 1964

nd I from P e	Male		Female	Total		Per Cent of Total	:
isolate	91	10	91	182		9.9	ŢĮ.
4 yrs.	167		153	320		17.5	
9 yrs.	80	0	74	154	0.100	8.4	
yrs.	53		60	113		6.2	
-29 yrs.	37	0	71	108		5.9	
JTS-ve8	85 children 19	11	47	82		4.5	
Trs.	25		34	59		3.2	
-59 yrs.	ini sok og m 44	9	44 ^I	88		4.8	
······································	24		51	75		4.1	
TS.	27	0	30 _	57	JAD.	3.1	
y of Denver	14		21	35		1.9	
Total 8	283			560		30.6	
Total	880		953	1,833			
% of Tot	Vety Is:	48.0		52.0	Sec.		

chester cholerae-suis	î	14											1 4	2	1							2	1													6	20	cerro cerro chester
cholerae-suis v. kun cubana derby dublin enteritidis	1	3					1				1	1	13 16	1													1		1 2							16 3 22 5	44 8 122	cholerae-suís v. kun cholerae-suís v. kun cubana derby dublín
gallinarum give heidelberg Illinois Indiana	11 24 1	7 21 3										1 2	1	1	1		1	1											1						-	1 12 8 50 1 4	21 16 148 2	gallinarum give heidelberg Illinois
Infantis Kentucky livingstone manhattan melaegridis	12 1 13	4 3 1 6 1											1	1	L									3					1					1	-	21 4 2 7	101 13 10 9	Infantis Kentucky livingstone manhattan
minnesota montevideo muenchen newport oranienburg	1 24 2 3	1 3 1								and the second		1 1 6	1	1	L		1					2	1	1		1	1		1	1					-	1 29 8 12 9	7 67 19 37	melaegridis minnesota montevideo muenchen newport
orion pullorum saint-paul san-diego schwarzengrund	45 9 2	1 1 5 9 12										1		1	1							1			1	1		1							5	1 52 15 9	33 92 56 39	orion pullorum saint-paul san-diego
senfenberg simsbury tallahassee tennessee thompson	2	2 1 3 2										1									1	1	1			1			2							7 1 1 6 8	35 24 3 1 33 26	schwarzengrund senfenberg simsbury tallahassee tennessee thomesee
typhimurium typhimurium v. cop worthington zehlendorf untypable	26 6	25		1	1	1	2	1	2	1	4	39	7	1	2 2	2 1			1	1	2	1		1		1					2	2	1		3	123 1 13 1 3	344 11 24 1 3	typhimurium typhimurium v. cop worthington zehlendorf untypable
TOTAL	210	14	5	1	2	1	3	1	2	1	5	58	83	12	2 3	3 1	1	2	1	1	2	9	3	8	1	6	3	1	8	1 1	2	1	1	1	9 5	89	1,724	TOTAL

Source: National Animal Disease Laboratory, Ames, Iowa and Weekly Salmonella Surveillance Reports from Individual States.

* Includes March late reports.

NON-HUMAN ISOLATES REPORTED BY THE NATATATATATATATATA

																						5	STA	TE																		
SEROTYPE		Ala	Alask	a Ar	Lz Ar	k Cal	11 0	010	Conn	Dela	Fla	Ga I	daho	111	Ind	Iowa	Kan	s Ky	Md M	ass	fich :	Minn	Miss	Mont	N	NY BI	(* N	C Oh	10 Ok	1a 0	re P	as	Ten	in Te	x Va	Was	hwv	Va Wi	sc To	otal	4 Mo. Total	SEROTYPE
anatum bareilly binza blockley blukwa						1	2 3 3								1 2				33	2	1		3				Ann and								4	2			1	45 3 2 9 1	115 11 9 24 1	anatum bareilly binza blockley blukwa
bredeney california cerro chester cholerae-suís			2	2	1	1						3			1 2 3			1				1 1 4	1					3			1	1	1		10000			10	0	6 8 6 17 4	16 12 20 33 8	bredensy california cerro chester cholerae-suis
cholerae-suis v. kun cubana lerby ublin nteritidis		1	1		1	1 3 5												2	5	1		1						4				2	1		4				2	16 3 22 5 1	44 8 122 7 42	cholerae-suis v. k cubana derby dublin enteritidis
allinarum ive idelberg llinois diana		100			3 2	2 16					1 1	6		3	1 2 1		-		1 5		1	1 1	1				1				1	1		1	3 5	1		-		12 8 50 1 4	21 16 148 2 6	gallinarum give heidelberg Illinois Indiana
fantis stucky ingstone hattan aegridis		1000		1	1	10 3 1 7					1 1	-		10.0 M	3	-	3			1				13		1		1										1		21 4 2 7 14	101 13 10 9 19	Infantiš Kentucky livingstone manhattan melaegridis
nesota sevideo schen ort ienburg	1	1	3		2	1 1 1			1	2	4		2	21		1		1	1	3	1	1 1 1 2				1	5	2				6		31	1					1 29 8 12 9	7 67 19 37 35	minnesota montevideo muenchen newport oranienburg
n prum t-paul liego urzengrund nberg	1 1 1			-		1 5 1 2 2			1		12		2	7 3 1	2		1	2		2	1 5 2	6 2 2	2	1 6			4	1	7		1			1 2	11	1		3		1 52 15 9 18 7	3 92 56 39 35 24	orion pullorum saint-paul san-diego schwarzengrund senfenberg
ury hassee ssee son murium	1		6	1 10	1 2 1 17	1	1	2		1 2	4	1	1	4	2	6	4	2	2	12	1 19	1	3				1 3	1 3		1	1	1	2	1	11			1	1	1 6 8 23	3 1 33 26 344	simsbury tallahassee tennessee thompson typhimurium
nurium v. cop Ington ndorf able		1			4									2						1		2										1					1	2		1 13 1 3	11 24 1 3	typhimurium v. cop worthington zehlendorf untypable
TOTAL	7	5	12	27	100		1	2	2	11	31	1	8	42	4	13	8	54	12	22	40	23	5	20		2	14	16	7	3	2	14	4	10	41	4	1	21	58	89 1	724	TOTAL

Source: National Animal Disease Laboratory, Ames, Iowa and Weekly Salmonella Surveillance Reports from Individual States.

TABLE VII

Salmonella derby Isolations and Total Salmonella Isolations Reported by Month*

		Total Salmonella Isolations	S. derby Isolations	Per Cent of Total
1962	November	922	18	2.0
	December	794	16	2.0
1963	January	1,111	30	2.7
	February	1,059	22	2.1
	March	931	28	3.0
	April	1,330	61	4.6
	May	1,738	139	8.0
	June	1,640	203	12.4
	July	2,133	303	14.2
	August	1,770	155	8.8
	September	1,786	164	9.2
	October	2,462	228	9.3
	November	1,381	127	9.2
	December	1,439	175	12.2
1964	January	1,601	213	13.3
	February	1,442	301.	20.9
	March	1,279	290	22.7
	April	1,082	399	21.2

*As reported to the Salmonelle Surveillance Unit from 50 States and the District of Columbia.

Figure I.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE in the United States



