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REPORT NO. 67

NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS. . .

FOR THE MONTH OF OCTOBER 1967

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE
Bureau of Disease Prevention and Environmental Control

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

This issue of the Salmonella Surveillance Report contains reports of outbreaks from five states, a review of food-borne outbreaks compiled by the National Communicable Disease Center, and a list of products recalled by the U.S. Food and Drug Administration because of salmonella contamination.

In October 1967, 1,667 isolations of salmonellae were reported from humans, an average of 417 isolations per week (Tables I and II). This number represents a decrease of 60 (12.6 percent) from the weekly average of September 1967 and a decrease of 13 (3.0 percent) from the weekly average of October 1966. Reports of 472 nonhuman isolations of salmonellae were received during October, an increase of 197 (71.6 percent) over September 1967 (Tables IV, V, and VI). This marked increase in nonhuman isolates reported for October is due to inclusion of isolates from regional laboratories of the U.S. Department of Agriculture. These reports were omitted in September.

II. REPORTS OF ISOLATIONS FROM THE STATES

A. HUMAN

The seven most frequently reported serotypes during October were the following:

Rank	Serotype	Number	Percent	Rank Last Month
1	S. typhi-murium and S. typhi-murium var. copenhagen	495	29.7	1
2	S. enteritidis	119	7.1	3
3	S. heidelberg	110	6.6	4
4	S. saint-paul	108	6.5	5
5	S. thompson	106	6.4	Not listed
6	S. newport	100	6.0	2
7	S. infantis	85	5.1	6
	Total	1123	67.4	
	Total (all serotypes)	1667		

Salmonella thompson ranks fifth this month in part due to 38 isolations reported from Florida. A discussion of an outbreak caused by S. thompson in Tampa, Florida, is presented in this issue.

The age and sex distribution is shown in Table III.

B. NONHUMAN

Twenty-nine states reported nonhuman isolations of salmonellae, in which 54 different serotypes were represented.

The seven most frequently reported serotypes during October were the following:

Rank	Serotype	Predominant Source and Number	Number	Percent	Rank Last Month
1	S. typhi-murium and S. typhi-murium var. copenhagen	cattle (13)	59	12.5	1
2	S. infantis	chickens (11)	34	7.2	Not listed
3	S. anatum	frozen eggs (10)	31	6.6	Not listed
	S. oranienburg	dry milk (7)	31	6.6	6
5	S. thompson	chickens (16)	28	5.9	Not listed
6	S. saint-paul	turkeys (18)	24	5.1	Not listed
7	S. derby	bone meal/meat scraps (7)	19	4.0	Not listed
	S. senftenberg	bone meal/meat scraps (9)	19	4.0	6
	Total		245	51.9	
	Total (all serotypes)		472		

The most prominent nonhuman sources of salmonellae reported during October were bone meal/meat scraps, 68 (14.4 percent); chickens, 55 (11.7 percent); turkeys, 46 (9.7 percent); animal feed unknown, 39 (8.3 percent); and frozen eggs, 31 (6.6 percent).

III. CURRENT INVESTIGATIONS

A. A Large Outbreak of Salmonellosis Following a Turkey Barbecue

Reported by E. A. Rogers, M.D., Director of Health, Nebraska State Department of Health, Kenneth Maier, EIS Officer assigned to the Omaha-Douglas County Health Department, Bernard Aserkoff, M.D., William Woodward, M.D., and Lowell Young, M.D., Bacterial Diseases Section, Epidemiology Program, NCDC, William Martin, M.S., Assistant Chief, and Joy Wells, B.S. (Mrs.), Epidemiological Services Laboratory Section, Epidemiology Program, NCDC.

In September 1967, Oxford, Nebraska (est. pop.: 1,324), celebrated its Eleventh Annual Oxford Turkey Days, a town festival and turkey barbecue which attracted more than 5,000 people from Nebraska and Kansas, as well as visitors from at least 30 other states. In the days following the barbecue, physicians in the area noticed a marked increase in cases of gastroenteritis, and an epidemiologic investigation was initiated.

Initial investigation in the Oxford area disclosed that 13 of 36 people who had attended the barbecue were ill with gastroenteritis and none of 60 people who had not attended were ill. With the barbecue thus implicated as the cause of the outbreak, a larger survey of all who had attended was then conducted. Of 1,048 people within a 50-mile radius of Oxford who had attended and were subsequently interviewed, 284 had been ill, an attack rate of 26.9 percent. Using the attack rate of this sample population, an estimated 1,350 of the 5,000 people attending the barbecue had been ill.

Onset of symptoms ranged from 1 to 8 days following the barbecue, with a mean of 3.3 days. Symptoms were diarrhea (95.6 percent), abdominal cramps (84.6 percent), vomiting (20.1 percent), and fever (50.9 percent). Antibiotics, either chloramphenicol (1 gm/day for 3 days) or ampicillin (1 gm/day for 3 days), were given in most instances.

Rectal swabs were cultured at the time of interview 2 weeks after consumption of the contaminated meal and after many had been treated with antibiotics. Among the 284 ill, 150 (52.8 percent) were positive for Salmonella typhi-murium, and of those 764 who were asymptomatic, 104 (13.6 percent) were also positive for S. typhi-murium. In addition, 24 were positive for other serotypes (see table below). Eleven people were known to have been hospitalized as a result of the illness, and one death was reported. A 79-year-old female with asthma and chronic renal insufficiency who had attended the barbecue was hospitalized on September 5 with febrile gastroenteritis, severe dehydration, and obtundation. Stool culture was positive for S. typhi-murium. With intravenous fluids, chloramphenicol, and ampicillin, she became afebrile but suffered a cerebrovascular accident and never regained consciousness. Death occurred on September 15.

Results of Stool Cultures

	Ill	Percent Ill	Asymptomatic	Percent Asymptomatic	Total	Percent Total
S. typhi-murium	150	52.8	104	13.6	254	24.2
S. manhattan	10	3.5	5	0.6	15	1.4
S. newport	1	0.4	3	0.4	4	0.4
S. typhi-murium and S. manhattan	1	0.4	---	---	1	0.1
S. typhi-murium and S. newport	3	1.1	1	0.1	4	0.4
Negative	119	41.8	651	85.2	770	73.5
TOTAL	284	100.0	764	99.9	1048	100.0

Food histories implicated turkey rolls served at the barbecue as the vehicle of infection. The turkey rolls had been prepared, wrapped in aluminum foil, and frozen under U.S. Department of Agriculture inspection from previously processed and inspected breeder hens. Prior to the barbecue, the wrapped, frozen rolls were partially thawed, buried in the hot barbecue pit, cooked for 16 hours, then cut into slices, and immediately served as sandwiches. Because the turkey rolls had not been tightly wrapped and had not been fully thawed before cooking, juice leaked out during cooking, partially extinguishing the fire. Also, the rolls were packed closely in the barbecue pit, interfering with heat conduction in the cooking. Despite the long cooking time, pit temperature was not high enough to cook the meat adequately. Salmonella typhi-murium was cultured from turkey meat served at the barbecue and from the cutting board on which the rolls were sliced. These cutting boards had been fabricated from fresh wood never before used in food preparation. In addition, the turkey wings from the hens used to make the rolls were also positive for S. typhi-murium. Isolations from the meat, the cutting board scrapings, and the wings, all reacted with phage type 2a, as did 8 of 10 human isolates typed.

EDITOR'S COMMENT: This extensive interstate outbreak demonstrates that several mistakes in food preparation are usually needed to produce an epidemic of salmonellosis. In this instance, turkeys used to prepare the rolls were already contaminated with salmonellae. A combination of inadequate thawing prior to cooking, poor wrapping of the rolls, and insufficient space in the barbecue pit, all combined to promote incubation rather than sterilization of the original inoculum. Finally, many people attending the barbecue realized the meat was inadequately cooked but consumed the sandwiches anyway.

B. Salmonellosis in a Florida Junior High School

Reported by E. Charlton Prather, M.D., Director, Division of Epidemiology, Florida State Board of Health, Lawrence P. Levitt, M.D., EIS Officer assigned to the Hillsborough County Health Department, and Richard Selden, M.D., EIS Officer, Bacterial Diseases Section, Epidemiology Program, NCDC.

An outbreak of gastroenteritis occurred in mid-September involving approximately 300 of 876 students in a Tampa, Florida, junior high school. Symptoms occurred 5 to 72 hours after consumption of a common meal and included abdominal pain (73 percent), diarrhea (41 percent), fever (39 percent), and vomiting (26 percent). Two students were hospitalized; no deaths were reported. Stool cultures performed 2 days after the outbreak were positive for Salmonella thompson in 19 of 20 students with diarrhea. In a subsequent culture survey 1 week later, 8 of 17 who had been ill and 3 of 15 who were asymptomatic were still positive for S. thompson.

Food histories using the presence of diarrhea as the criterion for illness statistically implicated roast beef served at lunch September 13 as the vehicle of infection. One hundred seven of 214 students who had eaten roast beef were ill (AR = 50.0 percent) contrasted with 17 of 270 who had not eaten and were ill (AR = 6.0 percent). The roast beef had been obtained as U.S. Department of Agriculture commodity frozen meat. It was thawed, cooked, and then refrigerated on September 12; the next morning it was sliced and kept warm on a steam table until it was served. In addition, 25 servings of canned ham left from lunch served September 12 were served on September 13 from the same tray used to serve the roast beef. None of the roast beef served was available for culture, but samples from the same lot of beef were negative for salmonella, as were cultures from the kitchen area. Cultures of the leftover ham were positive for S. thompson.

Seven of nine food handlers working in the kitchen had stool cultures 1 month earlier as a routine surveillance measure and were negative for salmonella at that time. Following the outbreak, five were positive for S. thompson, though all denied symptoms suggesting recent illness. One of these five had not consumed the roast beef and had assisted in the preparation of both the roast beef and the ham platters.

EDITOR'S COMMENT: That roast beef was the vehicle in this large-scale outbreak of salmonellosis can be concluded by statistical analysis of food histories. However, how the meat was initially contaminated is not clear. Meat from this lot was distributed to other school cafeterias in the Tampa area and no illnesses were noted. In addition, beef from the same lot was cultured and was negative for salmonella. It is possible that the meat became contaminated from the environment; however, cultures done shortly after the outbreak did not support this hypothesis. Finally, a food handler may have contaminated the beef during preparation of the meal. Of the five food handlers who were positive for S. thompson after the outbreak, four had consumed the contaminated beef, but the fifth had not, and it was she who had prepared both the beef and ham. Although she had been negative on routine culture 1 month earlier and had no symptoms of diarrheal illness, she could well have acquired S. thompson in the interim and then contaminated the meat prior to its serving.

IV. REPORTS FROM THE STATES

A. NEW MEXICO

Salmonella thompson Outbreak Traced to Beef Jerky

Reported by Daniel E. Johnson, Ph.D., Chief, Division of Laboratories, and Thomas H. Tomlinson, Jr., M.D., Associate Director for Human Factors, New Mexico State Department of Public Health, Kathleen Hawkins, M.D., EIS Officer formerly assigned to the New Mexico State Department of Public Health, and James Glosser, D.V.M., EIS Officer assigned to the US-Mexico Border Rabies Program.

An outbreak of *Salmonella thompson* infections occurring in New Mexico during November and December 1966 and January 1967 was traced to ingestion of contaminated beef jerky. Of the 97 positive cultures reported from the counties of Rio Arriba, Santa Fe, Sandoval, and Bernalillo, 64 were from persons who had eaten the jerky shortly before the onset of illness. Predominant symptoms included diarrhea, cramps, vomiting, and fever. There were no deaths.

Beef jerky processed at one local company in Albuquerque and sold under a single brand name was associated with 54 of the illnesses. Several other brands were implicated in the remaining cases. In addition to the laboratory-documented cases, 148 cases of gastroenteritis were directly associated with consumption of the jerky but were not examined bacteriologically.

Beef jerky is thinly sliced beef which has been treated with preservatives and thoroughly heated and dried. The meat is first sliced to produce a maximum thickness of 1/8 inch at the end of the drying process. After the slices are uniformly salted, they are placed in single layers on metal racks in a drying chamber or room with a minimum temperature of 165° F for the first hour and a minimum of 145° F for an additional 24 hours. Final packing and labeling is often done in the same work area in which the meat is prepared for drying.

Inspection of the Albuquerque company disclosed gross violation of sanitation procedures and improper regulation of temperature controls. *Salmonella thompson* was recovered from many samples of beef jerky, from the plant environment, and from mouse feces found in the plant. Cultures obtained from the patients, the beef jerky, and the plant environment were forwarded to Dr. E. S. Anderson, Director, Enteric Reference Laboratory, Central Public Health Laboratory, London, England, for phage typing. All cultures were identified as phage type 1.

EDITOR'S COMMENT: This is the second outbreak due to beef jerky reported in the Salmonella Surveillance Report. The first report (see SSR #17) occurred in California and was much smaller, involving only 10 cases. The preparation of beef jerky should include careful protection against contamination during the entire process, since the product is eaten without further processing or cooking.

B. NORTH CAROLINA

Gastroenteritis Following a Christmas Party in Smithfield, North Carolina

Reported by Martin P. Hines, D.V.M., Director, Division of Epidemiology, North Carolina State Board of Health, and Peter Schrag, M.D., EIS Officer assigned to the North Carolina State Board of Health.

An outbreak of gastroenteritis occurring after a company Christmas party in North Carolina in 1966 involving 172 of the 308 employees who attended the banquet. Onset of symptoms ranged from 12 to 96 hours after the banquet, with 92 percent of the cases occurring within 48 hours. Symptoms included diarrhea (89 percent), cramps (85 percent), nausea (73 percent), vomiting (39 percent), and fever (78 percent). The median duration of illness was 5 days. Ninety-five persons (55.2 percent) consulted a physician, and 25 (14.5 percent) required hospitalization. No deaths were reported. Stool cultures from 14 patients were positive for Salmonella typhi-murium.

The menu consisted of ten items, including two main dishes, turkey and ham. Food histories statistically implicated sliced turkey, dressing, and turkey giblet gravy. The turkey was prepared from 12 frozen turkeys which were cooked the night before the meal and then refrigerated. On the morning of the meal, the turkeys were sliced and kept warm over a steambath set at 75° F until served at 7:30 pm. Dressing was prepared from eggs and bread crumbs. Gravy was prepared from sliced turkey giblets and simmered all day prior to being served. Small samples of foods served were obtained for culture. Salmonella typhi-murium was isolated from the giblet gravy but not from the turkey or dressing. In addition, S. typhi-murium was isolated from ham which had been sliced on the same wooden chopping block with the same knife immediately after the turkey was sliced.

A culture survey of food handlers demonstrated no carriers of salmonellae.

EDITOR'S COMMENT: Food histories had implicated the turkey and two foods prepared from it as vehicles of infection in this large outbreak. Although S. typhi-murium was not actually isolated from the turkey, evidence for turkey as the vehicle of infection is still strong.

C. OREGON

An Outbreak of Gastroenteritis and Typhoid Fever Among Visitors to British Columbia

Reported by Edward L. Goldblatt, M.D., Director, Section of Epidemiology, Monroe A. Holmes, D.V.M., Public Health Veterinarian, and Mrs. Vivien Runte, Public Health Nurse, Oregon State Board of Health; Thomas L. Meador, City Health Officer, Portland, Oregon; John A. Beare, M.D., Chief, Division of Epidemiology, Washington State Department of Health; R. W. Robertson, Chief, Quarantine Division, and John W. Davies, M.D., Chief, Epidemiology Division, Department of National Health and Welfare, Ottawa, Canada; and Jacob L. Pinnas, EIS Officer assigned to the Portland City Health Department.

On September 29, 1967, two physicians from Portland, Oregon, reported 3 possible cases of typhoid fever to the City and State Health Departments. An investigation revealed that these 3 were part of a group of 26 youths from the Portland area who had attended an ice hockey training session in Cranbrook, British Columbia, the third week of August. Twenty-five boys developed gastroenteritis, as did 36 of 41 persons from 11 families who went to Cranbrook with their boys or to bring them home. Families stayed

in different places in the area during their visit. All persons who became ill after arriving in British Columbia developed their illnesses between 2 and 11 days after arrival; mean and median onset dates were 7 days after arrival.

Among a total of 67 persons from Oregon who went to British Columbia, 61 had gastrointestinal symptoms. Of these, 80 percent had diarrhea, 64 percent had abdominal cramps, 54 percent reported fever, 47 percent were nauseated, 30 percent vomited, 33 percent experienced headache, 25 percent had chills, and 8 percent had bloody diarrhea. The shortest duration of illness was 1 hour, but several children had intermittent symptoms for weeks; the median duration was 4 days. Only 1 case of a mild gastrointestinal illness occurred in a household contact who did not visit British Columbia. Otherwise, there were no secondary cases. Five children were hospitalized with gastroenteritis; the illnesses of 3 of these children were confirmed as typhoid fever.

Seven boys from Spokane, Washington, also attended the session; 4 of the boys developed gastroenteritis, but none developed typhoid fever. Case histories of the 3 Portland boys with typhoid fever are as follows:

Case No. 1

This 12-year-old boy arrived in British Columbia on August 20, 1967. On August 22, he developed fever, headache, intermittent diarrhea, nausea, and vomiting. He returned to Portland on August 28 complaining of headache, fever, and malaise. He was seen on several occasions as an outpatient at which times he denied diarrhea, he was afebrile, and there were no abnormal physical findings or weight loss. Because of persisting symptoms, he was hospitalized for observation on September 7. The first fever spike was observed on September 10. Agglutinin titers for salmonella were negative on September 7; on September 17, titers of 1:20 for group D "O" antigen and 1:80 for group D "H" antigen were observed. On September 15, Salmonella typhi was identified in a blood culture. Ampicillin and chloramphenicol were administered, and the patient became afebrile after 4 days.

Case No. 2

This 16-year-old boy arrived in British Columbia on August 19, 1967. On August 22, he developed nausea, vomiting, and severe watery diarrhea lasting approximately 1 week. On September 5, he developed pharyngitis, fever, photophobia, and headache, and 3 days later was admitted to a Portland hospital with a pulse rate of 104 and a temperature of 105.8° F. On physical examination the abdomen was diffusely tender with tenderness to percussion over the liver. On September 15, rose spots were observed. The "O" agglutinin titer rose from 1:80 on September 9 to 1:640 on September 18, and the "H" titer rose from 1:20 to 1:640. The patient had no history of typhoid immunization. On September 19, a blood culture yielded S. typhi. There was good clinical response to ampicillin and intravenous fluids.

Case No. 3

This 14-year-old brother of Case No. 2 also arrived in British Columbia on August 19 and developed nausea, vomiting, diarrhea, fever, and headache on August 22. Medication was given in Canada, and he became afebrile after 5 days; diarrhea, malaise, and anorexia persisted. A fever developed on September 12, and he was hospitalized with a temperature of 103.4° F. There was diffuse abdominal tenderness, more severe in the right upper quadrant. On September 16, the "O" agglutinin titer was 1:1280 and "H" was 1:80 with no history of typhoid immunization. On September 19, S. typhi was recovered by blood culture. He responded well to ampicillin and fluids.

These 3 boys with typhoid fever were the only ones from the group of 26 who stayed at a vacation resort 12 miles south of Cranbrook, British Columbia, at Moyie Lake. This resort consists of several cottages, camping and trailer accommodations, and a restaurant. As a result of the Oregon outbreak, Canadian officials initiated an investigation to locate any additional typhoid cases and to determine the source of the outbreak at the resort. Four laboratory-confirmed cases and 2 suspect cases of typhoid fever in Canadians were uncovered, all of whom were reported to have visited this resort during the 2-week period when the Oregon families were staying there. One of the cases was the cleaning lady for the resort. Further investigation revealed that blockage of the sewage system occurred at the lodge approximately 2 weeks prior to the arrival of the hockey players. After at least 24 hours of complete blockage, the entire septic tank system was exposed and repaired. During the subsequent investigation, at least two water taps at the lodge were shown to be heavily contaminated with coliform organisms. The water supply for the resort is entirely separate from the municipal water supply.

Stool specimens were obtained for culture from all Oregonians who visited British Columbia or have subsequently become ill. Except for the 3 confirmed cases of typhoid fever in Oregonians, all other visitors were found negative for enteric bacterial pathogens.

EDITOR'S COMMENT: Apparently two separate and unrelated outbreaks occurred in British Columbia at this time. The larger outbreak consisted of a transient gastroenteritis affecting most of the visitors from Oregon; no pathogenic organism was isolated. The other consisted of 7 cases of typhoid fever occurring among Oregonians and Canadians staying at the Moyie Lake Resort. Epidemiologic evidence points to contaminated water as the infecting vehicle.

V. SPECIAL REPORTS

A. U.S. Food and Drug Administration Weekly Recall List - Summary of Products Contaminated with Salmonellae, Week Ending July 4 through Week Ending November 7, 1967

Each week, the Press Relations Staff, Office of Education and Information, U.S. Food and Drug Administration, compiles a list of products announced as recalled by the Food and Drug Administration. The Salmonella Surveillance Report will summarize on a bi-monthly basis those products recalled because of contamination by salmonellae. This first list includes 19 products recalled between the week ending July 4 and the week ending November 7, 1967.

U.S. Food and Drug Administration Weekly Recall List
Summary of Products Contaminated with Salmonellae
Week Ending July 4 through Week Ending November 7, 1967

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot Number	Use	Depth of Recall	Product Distribution	Serotype
7/25	liver protein fraction	Wilson Labs., Chi., Ill.	137603	veterinary	wholesale	none to consumer	S. albany S. eimsbuettel
8/15	dried torula yeast	Lake States Div., St. Regis Paper Co.	676219 675047	food	wholesale	national	S. derby
	Plainview nonfat dry milk	Plainview Farmers' Coop Creamery, Plainview, Neb.	R200, R196, R194	food	manufacturer	Ill. & Minn.	S. cerro S. siegburg
8/22	Sugar Creek Extra Grade Spray, non-fat dry milk	Lytton Coop Creamery Assoc., Lytton, Iowa	206	food	wholesale	Ill. & Mo.	S. schwarzengrund
8/29	Durkee's homogenized creamed coconut	Durkee Famous Foods, Bethlehem, Pa.	6H22B	food	manufacturer	eastern U.S.	S. senftenberg
	Merit Coconut Drink Powder	Merit Food Co., Inc., Bally, Pa.	6H22B	food	retail	Columbus, Ohio	S. senftenberg
	raw coconut butter	Durkee Famous Foods, Bethlehem, Pa.	6H22B	food	manufacturer	none shipped	S. senftenberg
9/12	thyroid powder	Wilson Labs., Chi., Ill.	138102	prescription drug	wholesale	Pa. & Ohio	S. senftenberg
	liver protein fraction "A"	Wilson Labs., Chi., Ill.	137917	over-the-counter drug	wholesale	New York & Calif.	S. eimsbuettel
10/3	spray nonfat dry milk	Midlands Milk Products Corp., Hannibal, Mo.	2239, 2240	food	wholesale	Missouri	S. meleagridis

10/11	Plain Chocolate Candies	M & M Candies, Hackettstown, N.J.	738G, 739A
10/31	extra grade spray nonfat dry milk (Sugar Creek Foods, Div. of National Dairy Products Corp., Chi., Ill.	Viroqua Cooperative Creamery, Viroqua, Wisc.	257
	Wilzyme 400 pancreatic enzyme concentrate	Wilson Labs., Chi., Ill.	135806
	pancreatin 4X N.F.	Wilson Labs., Chi., Ill.	138254
	thyroid 3X USP	Wilson Labs., Chi., Ill.	138276
11/7	Plain Chocolate Candies	M & M Candies, Hackettstown, N.J.	736F, 738A, 739C, 739G, 740D, 740F
	Peanut Chocolate Candies	M & M Candies, Hackettstown, N.J.	738F 738G
	spray dried egg white solids	Henningsen Foods, Inc., N.Y., N.Y.	N-1215
	brewers dried yeast	P & M Products, Inc., San Antonio, Texas	

food	retail	national	S. anatum S. cubana S. montevideo Group E_2
food	wholesale	Kentucky	S. binza
prescription drug	manufacturer	Pa. & Calif.	Group 40, untypable
prescription drug	manufacturer	La., Ill., Va., Neb., Pa., Calif., Mich.	S. worthington
prescription drug	manufacturer	Ill., Mich., Ohio, Ind., Pa.	S. anatum
food	retail	national	S. anatum S. cubana S. montevideo Group E_2 Group F
food	retail	national	S. anatum S. cubana S. montevideo Group E_2 Group F
food	wholesale	Springfield, Ill.	S. oranienburg
food	retail	Tex., Col., Miss., Okla., La., Mo.	S. montevideo Group E_4

B. A Review of Food-Borne Outbreaks - 1966

The Enteric Diseases Unit of the Bacterial Diseases Section, Epidemiology Program, NCDC, has compiled a listing of all reported food-borne illness in the United States for 1966. Source of information for this report included state and local health departments, the National Center for Urban and Industrial Health, the Epidemic Intelligence Service, and newspaper clippings.

Etiology of Food Poisoning Episodes
Reported to the NCDC from All Sources for
Calendar Year 1966

	Outbreaks		Individuals	
	Number	Percent of Total	Number	Percent of Total
Bacterial	67	37.0	4067	51.1
Cl. perfringens	8	4.4	1346	16.9
Salmonella species	23	12.7	1292	16.2
Staphylococcus aureus	26	14.4	860	10.8
Botulism	4	2.2	10	0.1
Shigella species	3	1.7	76	1.0
Other	3	1.7	483	6.1
Chemical	2	1.1	159	2.0
Parasitic	4	2.2	7	0.1
Viral	0		0	
Unknown	108	59.7	3727	46.8
TOTAL	181		7960	

EDITOR'S COMMENT: Reporting of food-borne diseases has been extremely incomplete, and no conclusions concerning the scope or magnitude of this problem can be drawn from the data presented. However, emphasis on improved surveillance from many sources should permit more accurate characterization of patterns of food-borne illness.

VI. INTERNATIONAL

POLAND

Salmonellosis in Man in Poland, 1957-1966

Reported by Z. Buczowski, M.D., Director, and K. Pietkiewicz, M.D., Assistant Director, National Salmonella Center, Gdansk, Poland.

In Poland, during the 10-year period 1957 to 1966, 52,461 human isolations of salmonellae, representing 56 different serotypes, were reported. The two most common serotypes isolated were Salmonella enteritidis, representing 44.7 percent of total reported isolations, and S. typhi-murium, representing 29.8 percent of reported isolations. The ten most common serotypes accounted for 96.9 percent of all salmonella isolations (see accompanying table).

The clinical status of each person from whom isolations were made was also reported. The ratio of isolations from persons ill to persons asymptomatic varied from 8.4:1 for S. enteritidis to 1.9:1 for S. typhi-murium and 0.1:1 for several less common serotypes.

During this same 10-year period, 336 food-borne outbreaks due to salmonella were identified. Salmonella typhi-murium accounted for 258 outbreaks (76.8 percent), S. enteritidis for 44 (13.1 percent), S. dublin for 19 (5.6 percent), S. cholerae-suis var. kunzendorf for 5 (1.5 percent), and S. heidelberg for 4 (1.2 percent).

EDITOR'S COMMENT: The clinical status of persons from whom isolations were made shows marked variation among the serotypes listed in the accompanying table. Although this seems to suggest differences in pathogenicity of serotypes, this conclusion cannot be reached from the data available. Information concerning epidemiologic patterns of infection by each serotype and surveillance practices through which asymptomatic cases are discovered are necessary before significance can be ascribed to these data.

VII. FOOD AND FEED SURVEILLANCE

NONE

Ten Most Common Salmonella Serotypes
Isolated from Man in Poland, 1957-1966

Rank	Serotype	Total Isolations	Percent Total	Clinical Status			Ill:Asymptomatic
				Ill	Asymptomatic	Unknown	
1	S. enteritidis	23,450	44.7	20,777	2,468	205	8.4:1
2	S. typhi-murium	15,630	29.8	10,241	5,253	136	1.9:1
3	S. anatum	2,783	5.3	231	2,541	11	0.1:1
4	S. newington	2,514	4.8	251	2,233	30	0.1:1
5	S. give	2,360	4.5	156	2,182	22	0.1:1
6	S. bovis-morbificans	1,371	2.6	571	789	11	0.7:1
7	S. brandenburg	968	1.8	181	778	9	0.2:1
8	S. heidelberg	698	1.3	238	450	10	0.5:1
9	S. dublin	555	1.1	433	114	8	3.8:1
10	S. derby	514	1.0	53	457	4	0.1:1
	TOTAL	50,843	96.9	33,132	17,265	446	1.9:1
	GRAND TOTAL	52,461					

Figure 1.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE
IN THE UNITED STATES

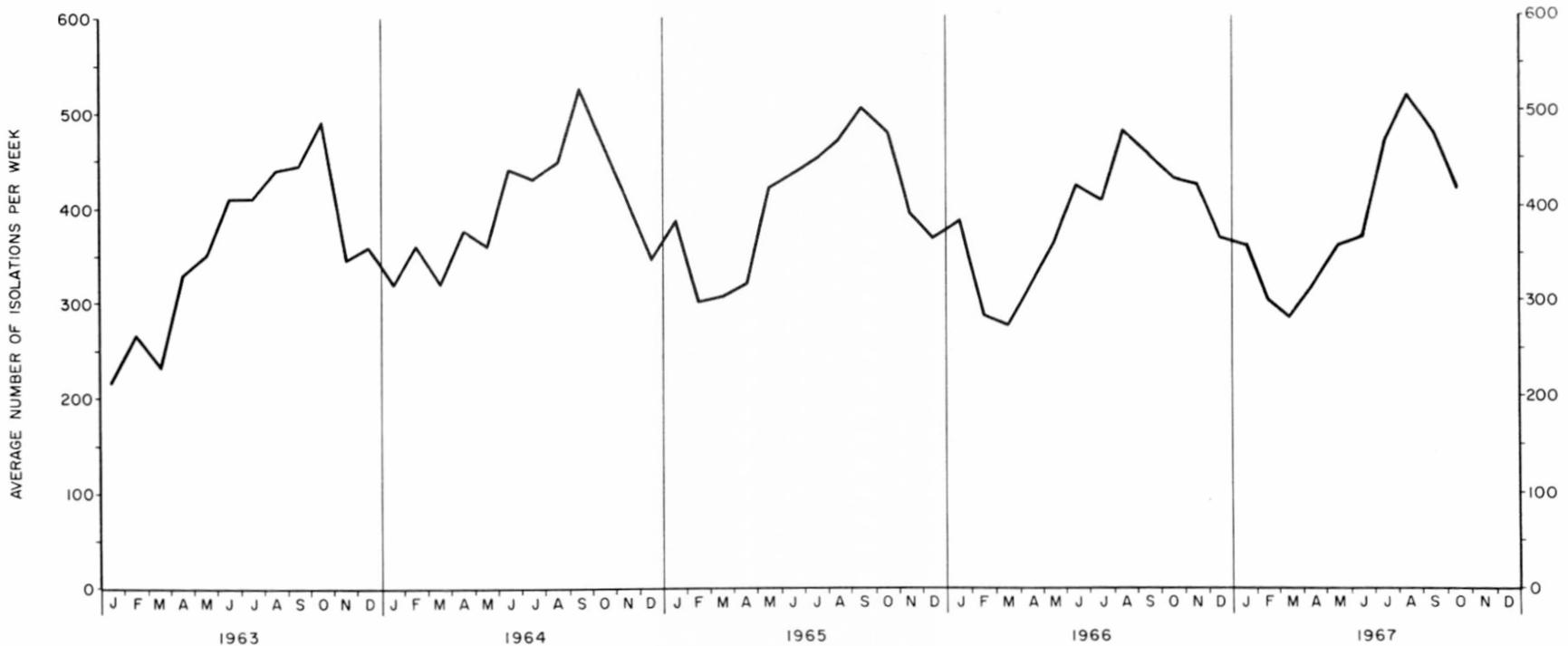

TABLE 1
COMMON SALMONELLA SEROTYPES ISOLATED FROM HUMANS IN THE UNITED STATES DURING*OCTOBER, 1967

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																															SEROTYPE
	NEW ENGLAND							MIDDLE ATLANTIC						EAST NORTH CENTRAL						WEST NORTH CENTRAL								SOUTH ATLANTIC								
	ME	NH	VT	MASS	RI	CONN	TOT	NY-A	NY-BI	NY-C	NJ	PA	TOT	OHIO	IND	ILL	MICH	WIS	TOT	MINN	IOWA	MO	ND	SD	NEBR	KAN	TOT	DEL	MD	DC	VA	WV	NC	SC	GA	FLA	TOT	
anatum				5			5		1				1			2	1		3	1						1	1				1			4		5	anatum
bareilly				2			2		1				1																					1	1	2	bareilly
berta																																					berta
blockley				4			4		1	2	1	1	5			1	2		3			1				1	1		1					2		3	blockley
braenderup				1			1								1				1																		braenderup
bredeney																1			1																		bredeney
chester																2			2		1	1				2					2					2	chester
cholerae-suis v kun																1			1												3					3	cholerae-suis v kun
cubana				1			1											1	1																2	2	cubana
derby									1	1	1		3			4	1		5	1						1	1		1		1			3		5	derby
enteritidis			1	22		10	33		5	6	10	1	22	8	3	11	6		28	2	2					4		5	2	3	1	4		4	1	20	enteritidis
give																																					give
heidelberg		1		2		1	4		7	8	3	3	25	1	1	4	3	7	16	2		5				7		1	2	2		21		6	2	34	heidelberg
indiana																															3					3	indiana
infantis	1			5		1	7		1	1			2	4	1	11	1	5	22	4		1	2			4	11	1			5	1	1		1		9	infantis
java						2	2			1	1	1	3	1		5		3	9	1							1								1		1	java
javiana				1			1							1					1			1				1				1				2	1	4	javiana
kentucky						1	1			2			2				1		1												3				1		1	kentucky
litchfield									1	1			2							1							1								1		1	litchfield
livingstone																																					livingstone
manhattan																3		2	5							1	1								1	1	manhattan
meleagridis																																					meleagridis
miami											1		1			1			1																1	5	6	miami
mississippi																1			1												1					1	mississippi
montevideo				6		1	7				3		3			1	1		2	1		1				2					2			1		3	montevideo
muenchen									1	2			3					4	4									1		2			1		4	muenchen
newington				2			2																								1					1	newington
newport				2		2	4		3			2	5			5		1	6	2	1					3	1		1	4		1		12	10	29	newport
oranienburg				1			1		4	1	3	1	9			5			5	1						1	2				1			4	5	oranienburg
panama																		5	5	2						1	3									panama
paratyphi B				9			9								3		1		4											2					2	paratyphi B
poona																																					poona
saint-paul				3		2	5		7	1	1	2	11			3	4	8	15	3						3	1	1		11		4		4	3	24	saint-paul
san-diego				3			3									1			1																		san-diego
schwarzengrund				1			1								1				1																		schwarzengrund
senftenberg				2			2			1			1																								senftenberg
tennessee										1			1																		1				1	2	tennessee
thompson				6		1	7		7	5	1	1	14			4	1	1	6	2		1				3		4		2	1	3		4	38	52	thompson
typhi				2		1	3		1	1		4	6	9	1		3		13							1	1				1	2	1		2	3	9	typhi
typhi-murium			1	57	1	4	63	1	18	11	9	11	50	8	4	33	48	15	108	12	4	9	1	1	1	19	47		3	1	7		12		9	9	41	typhi-murium
typhi-murium v cop				5		2	7				3	1	4				4		4																		typhi-murium v cop
urbana																																					urbana
weltevreden									1				1																								weltevreden
worthington															1				1											1						1	worthington
untypable group B		1		2	1		4										1		1		4					4			7						7	untypable group B
untypable group C_1																																					untypable group C_1
untypable group C_2																																					untypable group C_2
untypable group D																														1						1	untypable group D
untypable group E																																					untypable group E
untypable or unknown		1					1			1			1			1		2	3																		untypable or unknown
TOTAL COMMON	1	3	2	144	2	28	180	1	60	46	39	30	176	32	16	100	78	54	280	35	12	20	3	1	1	27	99	3	16	15	52	5	49	0	63	81	284	TOTAL COMMON
TOTAL OTHER	0	0	0	1	0	1	2	0	1	0	1	0	2	0	0	2	0	0	2	1	0	0	0	0	0	0	1	1	2	0	3	0	2	0	0	3	11	TOTAL OTHER
GRAND TOTAL	1	3	2	145	2	29	182	1	61	46	40	30	178	32	16	102	78	54	282	36	12	20	3	1	1	27	100	4	18	15	55	5	51	0	63	84	295	GRAND TOTAL

(New York, A-Albany, BI-Beth Israel, C-City)

The Beth Israel Salmonella Typing Center in New York is a reference laboratory and processes many cultures from other states which are assigned to the respective states although reported by NY-BI. Beth Israel reported a total of 120 isolations for October.

*Includes September late report

TABLE I (CONTINUED)
COMMON SALMONELLA SEROTYPES ISOLATED FROM HUMANS IN THE UNITED STATES DURING OCTOBER, 1967

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																							OTHER	OCT TOTAL	% of OCT TOTAL	1967 JAN-OCT TOTAL	% of 1967 JAN-OCT TOTAL	1966 JAN-OCT TOTAL	% of 1966 JAN-OCT TOTAL	SEROTYPE
	EAST SOUTH CENTRAL					WEST SOUTH CENTRAL					MOUNTAIN									PACIFIC											
	KY	TENN	ALA	MISS	TOT	ARK	LA	OKLA	TEX	TOT	MONT	IDA	WYO	COLO	NM	ARI	UTAH	NEV	TOT	WASH	ORE	CAL	ALAS	HAI	TOT	VI						
anatum																						6		5	11		26	1.6	251	1.5	262	1.6	anatum
bareilly							5			5																	10	0.6	63	0.4	65	0.4	bareilly
berta																											0	0.0	33	0.2	30	0.2	berta
blockley							1		1	2										1		3			4		22	1.3	455	2.7	493	3.0	blockley
braenderup																						1			1		3	0.2	73	0.4	87	0.5	braenderup
bredeney							1			1				2					2			1			1		5	0.3	99	0.6	103	0.6	bredeney
chester																						1			1		7	0.4	88	0.5	93	0.6	chester
cholerae-suis v kun																											4	0.2	18	0.1	22	0.1	cholerae-suis v kun
cubana																											4	0.2	55	0.3	122	0.7	cubana
derby							1			1												2		6	8		23	1.4	267	1.6	326	2.0	derby
enteritidis			1	1	2		2		1	3												7			7		119	7.1	1,067	6.4	1,030	6.3	enteritidis
give							2			2																	2	0.1	54	0.3	66	0.4	give
heidelberg		2			2	1	1		3	5				2			1		3	2	1	10		1	14		110	6.6	1,429	8.6	1,377	8.4	heidelberg
indiana																											3	0.2	38	0.2	59	0.4	indiana
infantis		1			1	1	3	5	3	12						1	1		2			10		9	19		85	5.1	796	4.8	1,152	7.0	infantis
java		1			1		1		1	2	1								1			6			6		26	1.6	243	1.5	305	1.9	java
javiana						4	4	2	20	30				1					1								38	2.3	305	1.8	222	1.3	javiana
kentucky																						1			1		6	0.4	31	0.2	24	0.1	kentucky
litchfield																											4	0.2	71	0.4	68	0.4	litchfield
livingstone																								1	1		1	0.06	48	0.3	23	0.1	livingstone
manhattan	1				1		1			1										1		3			4		13	0.8	247	1.5	93	0.6	manhattan
meleagridis																											0	0.0	6	0.04	6	0.0	meleagridis
miami																											8	0.5	54	0.3	62	0.4	miami
mississippi							3			3																	5	0.3	49	0.3	41	0.2	mississippi
montevideo			1		1		4	1	2	7						1			1			5		2	7		33	2.0	354	2.1	278	1.7	montevideo
muenchen				1	1		1	1	1	3												1			1		16	1.0	183	1.1	179	1.1	muenchen
newington				1	1																	1			1		5	0.3	40	0.2	38	0.2	newington
newport		1	1		2	1	6	1	21	29						3			3			17		2	19		100	6.0	1,013	6.1	1,016	6.2	newport
oranienburg	1				1		2		6	8				1		1			2			4		1	5		38	2.3	342	2.1	337	2.0	oranienburg
panama			1		1		1			1						2			2					3	3		15	0.9	161	1.0	240	1.5	panama
paratyphi B									4	4				1					1			3			3		20	1.2	144	0.9	124	0.8	paratyphi B
poona									1	1																	4	0.2	43	0.3	31	0.2	poona
saint-paul			1		1		4			4							19		19	4	7	12		3	26		108	6.5	723	4.4	600	3.6	saint-paul
san-diego			1		1		1			1																	6	0.4	127	0.8	110	0.7	san-diego
schwarzengrund																				2					2		4	0.2	67	0.4	53	0.3	schwarzengrund
senftenberg							1		1	2																	5	0.3	53	0.3	57	0.3	senftenberg
tennessee																											3	0.2	55	0.3	108	0.7	tennessee
thompson	1		1		2		2	1	1	4				1			4		5	2		11			13		106	6.4	415	2.5	493	3.0	thompson
typhi			1		1	2	1		1	4			1			3			4	1		8			9		50	3.0	582	3.5	580	3.5	typhi
typhi-murium	4	9	4	1	18		9	4	39	52	1			11		5			17	10	1	56		15	82		478	28.7	4,609	27.8	4,697	28.5	typhi-murium
typhi-murium v cop							2			2																	17	1.0	248	1.5	139	0.8	typhi-murium v cop
urbana																						1			1		1	0.06	17	0.1	24	0.1	urbana
weltevreden																								3	3		4	0.2	57	0.3	34	0.2	weltevreden
worthington																											2	0.1	23	0.1	31	0.2	worthington
untypable group B			1	1	2	2				2					19				19		1	1	1		3		42	2.5	442	2.7	296	1.8	untypable group B
untypable group C_1						1			3	4					1				1								5	0.3	127	0.8	97	0.6	untypable group C_1
untypable group C_2				1	1	5			2	7																	8	0.5	135	0.8	55	0.3	untypable group C_2
untypable group D						3			1	4					6				6								11	0.7	74	0.4	48	0.3	untypable group D
untypable group E									6	6																	6	0.4	32	0.2	12	0.1	untypable group E
untypable or unknown									15	15					2				2								22	1.3	170	1.0	68	0.4	untypable or unknown
TOTAL COMMON	7	14	13	6	40	20	59	15	133	227	2	0	1	19	28	16	25	0	91	23	10	171	1	51	256		1,633	98.0	16,076	97.1	15,876	96.5	TOTAL COMMON
TOTAL OTHER	0	0	0	1	1	0	0	0	6	6	0	0	0	1	0	0	0	0	1	0	2	5	0	1	8		34	2.0	487	2.9	584	3.5	TOTAL OTHER
GRAND TOTAL	7	14	13	7	41	20	59	15	139	233	2	0	1	20	28	16	25	0	92	23	12	176	1	52	264		1,667		16,563		16,460		GRAND TOTAL

TABLE II
OTHER SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING OCTOBER, 1967

SEROTYPE	REPORTING CENTER																			SEROTYPE
	Cal	Colo	Conn	Del	Fla	Hai	Ill	Md	Mass	Minn	Miss	NJ	NY-BI	NC	Ore	Tex	Va	Total	10 mos Total	
binza										1	1							2	8	binza
california																1		1	10	california
colorado																1		1	2	colorado
dublin	1																	1	5	dublin
eimsbuettel														1				1	22	eimsbuettel
hartford					2													2	18	hartford
heilbron		1																1	2	heilbron
johannesburg			1						1									2	15	johannesburg
lexington													1					1	2	lexington
lindenburg																	1	1	2	lindenburg
loma-linda	1														1			2	5	loma-linda
lomita																	1	1	4	lomita
minnesota	1													1				2	21	minnesota
mission												1						1	18	mission
nagoya																1		1	1	nagoya
narashino	1																	1	1	narashino
oslo						1												1	16	oslo
paratyphi A				1														1	7	paratyphi A
rubislaw					1										1			2	20	rubislaw
saphra																3		3	9	saphra
siegburg							2	1										3	9	siegburg
untypable group G																	1	1	4	untypable group G
untypable group O	1							1										2	3	untypable group O
TOTAL	5	1	1	1	3	1	2	2	1	1	1	1	1	2	2	6	3	34	487	TOTAL

(NY-BI=New York, Beth Israel)

TABLE III

Age and Sex Distribution of Individuals Reported as Harboring Salmonellae During October 1967

Age (Years)	Male	Female	Unknown	Total	Percent	Cumulative Percent
< 1	108	92	4	204	18.2	18.2
1 - 4	146	122	2	270	24.0	42.2
5 - 9	64	65		129	11.5	53.7
10 - 19	69	74	1	144	12.8	66.5
20 - 29	41	64		105	9.3	75.8
30 - 39	19	42		61	5.4	81.2
40 - 49	16	37		53	4.7	85.9
50 - 59	26	25		51	4.5	90.4
60 - 69	24	33		57	5.1	95.5
70 - 79	14	15	1	30	2.7	98.2
80 +	6	13		19	1.7	99.9
Subtotal	533	582	8	1123		
Child (Unspec.)	9	7	1	17		
Adult (Unspec.)	12	15		27		
Unknown	240	186	74	500		
Total	794	790	83	1667		
Percent of Total	50.1	49.9				

TABLE IV

REPORTED NONHUMAN ISOLATES BY SEROTYPE AND SOURCE, *OCTOBER, 1967

SEROTYPE	chicken	turkey	duck	pigeon	starling	avian	bovine	porcine	canine	feline	lab mouse	lab rat	guinea pig	monkey	racoon	hyena	sea lion	fox	skunk	oppossum	egg	egg albumen	powdered egg	frozen egg	frozen egg albumen	powdered egg yolk	egg product	chicken loaf	headcheese	dry milk	milk	ice cream	creamed coconut	yeast	shrimp dip	egg & milk	food, unknown	feather meal	bone meal/ meat scraps	animal feed unknown	fish meal	bean meal	liver meal	turtle	snake	water	turtle water	turtle tank	milk plant environmental	filter cloth	bathroom fixture	lab stock culture	veterinary vitamins	liver powder	thyroid powder	unknown	Total	10 mos Total	SEROTYPE
alachua																																								2																	2	107	alachua
albany																																											2										2				4	27	albany
anatum		3					1																	10					1	3									4	4								1	1	1				1		1	31	358	anatum
bareilly																																							1	1																	2	27	bareilly
binza																														5									2		1																8	119	binza
blockley	2	1						1																			1								1																						6	83	blockley
braenderup																				1																																					1	45	braenderup
bredeney		1						1																												1								1													4	104	bredeney
cerro	1	3						1																															2																		7	62	cerro
chester	1																																							1																	2	42	chester
cholerae-suis v kun								3																																																	3	30	cholerae-suis v kun
cubana																														1									3	1									1								6	199	cubana
derby								2		1							1											1	1					4					7		1															1	19	402	derby
drypool																																							4																		4	24	drypool
dublin							2																																																	1	3	9	dublin
eimsbuettel	2																																					1	7	4																	14	175	eimsbuettel
enteritidis	1						2				2					1		1				1																																			8	51	enteritidis
give	1																			1																			1							1											4	38	give
heidelberg	1	6				1	2	1																																3																4	18	400	heidelberg
illinois																																							2																		2	5	illinois
indiana																					4			3																1																	8	26	indiana
infantis	11					1		1	1												2			2	4	3		1											8																		34	264	infantis
java																																																4								1	5	27	java
javiana														1																																											1	18	javiana
johannesburg									3																																							1								1	5	15	johannesburg
kentucky	1																						1																	2	1							1	2								8	67	kentucky
lexington																																								1																	1	13	lexington
livingstone																																							2	2																	4	62	livingstone
manhattan	2												1																																												3	21	manhattan
meleagridis																																																1									1	22	meleagridis
miami							1																																																		1	3	miami
minnesota																																								3	1																4	34	minnesota
mississippi																																															1	1									2	4	mississippi
montevideo	1																						2	2			1									4			1	1																	12	220	montevideo
muenchen	1	2																1	2																												2										8	92	muenchen
newington																														1																											1	133	newington
newport	3						2																					1																1			1									3	11	109	newport
ohio																					1																			1																	2	2	ohio
oranienburg	2														1						1			5	1					7									3	6									4							1	31	168	oranienburg
orion																																							3																		3	23	orion
reading		2					2																																																		4	76	reading
saint-paul		18		1			1																						3										1																		24	281	saint-paul
san-diego		1																																																							1	67	san-diego
schwarzengrund	1	3																					2							1									1										1								9	106	schwarzengrund
senftenberg		2																															6						9																1	1	19	184	senftenberg
siegburg	1																							7																																	8	32	siegburg
tennessee		3																																						2									2								7	257	tennessee
thomasville																																							2								2										4	13	thomasville
thompson	16																								3												1		4						1		2	1									28	131	thompson
typhi-murium	3		1	1	3	3	13	2	2	1		1	2							1	1			1			1				1	1				1										1	2	3			1	1				2	49	675	typhi-murium
typhi-murium v cop	2					5		1																						1														1													10	123	typhi-murium v cop
typhi-suis								1																																																	1	9	typhi-suis
urbana																																												1			1										2	13	urbana
worthington	2																				1			1															1										1								6	101	worthington
untypable group B		1																																																							1	18	untypable group B
unknown																																				1				4		1															6	15	unknown
TOTAL	55	46	1	2	3	10	26	14	6	2	2	1	3	1	1	1	1	2	2	3	10	1	5	31	8	3	3	3	5	19	1	1	6	4	1	7	1	1	68	39	4	1	2	4	1	2	11	13	12	1	1	1	2	1	1	16	472	6,104	TOTAL

Source: National Animal Disease Laboratory, Ames, Iowa, weekly Salmonella Reports from individual states, and US-FDA-Div of Microbiology, Washington, D.C.

*Includes September late report from US-FDA.

TABLE V

REPORTED NONHUMAN ISOLATES BY SEROTYPE AND STATE, *OCTOBER, 1967

SEROTYPE	ALA	ARK	CAL	DC	GA	HAI	ILL	IND	IOWA	KAN	MD	MASS	MICH	MINN	MISS	MO	NEB	NEV	NJ	NY-A	NC	OHIO	OKLA	PA	TENN	TEX	VA	WASH	WISC	TOTAL	10 MOS TOTAL	SEROTYPE
alachua									2													2			2				2	107	alachua
albany																													4	27	albany
anatum			4	1			3		1					7								14						1	31	358	anatum
bareilly								1											1										2	27	bareilly
binza								2						1														5	8	119	binza
blockley			2					1				1		1								1							6	83	blockley
braenderup																			1										1	45	braenderup
bredeney			3										1																4	104	bredeney
cerro			5					1						1															7	62	cerro
chester								1														1							2	42	chester
cholerae-suis v kun									1																		2		3	30	cholerae-suis v kun
cubana							2	1						2	1														6	199	cubana
derby			5				2	2					6										1					3	19	402	derby
drypool													4																4	24	drypool
dublin			3																										3	9	dublin
eimsbuettel								5						3	2							2						2	14	175	eimsbuettel
enteritidis			3					1	1				2	1															8	51	enteritidis
give			1											1					1									1	4	38	give
heidelberg			10					6	1					1															18	400	heidelberg
illinois								1						1															2	5	illinois
indiana					3																	5							8	26	indiana
infantis		2	6				2	5					4	11		3												1	34	264	infantis
java			5																										5	27	java
javiana			1																										1	18	javiana
johannesburg			2										3																5	15	johannesburg
kentucky			3				2	2									1												8	67	kentucky
lexington					1																								1	13	lexington
livingstone								1					1						2										4	62	livingstone
manhattan							1	1								1													3	21	manhattan
meleagridis			1																										1	22	meleagridis
miami			1																			1							1	3	miami
minnesota								1							2							1							4	34	minnesota
mississippi			2																										2	4	mississippi
montevideo					1									3	1	1	1			4		1							12	220	montevideo
muenchen			5						3																				8	92	muenchen
newington							1																						1	133	newington
newport			7			2													1									1	11	109	newport
ohio																						2							2	2	ohio
oranienburg	1		6		1		6	7						2					2			6							31	168	oranienburg
orion														3															3	23	orion
reading								2	2																				4	76	reading
saint-paul			1			1		1	2					4					12									3	24	281	saint-paul
san-diego			1																										1	67	san-diego
schwarzengrund			3				1	1	1					1		2													9	106	schwarzengrund
senftenberg			1				1	1					7	2									1	6					19	184	senftenberg
siegburg							1							4								3							8	32	siegburg
tennessee			1				2							2								2							7	257	tennessee
thomasville								1			2			1															4	13	thomasville
thompson	1		4								2		4	2					14		1								28	131	thompson
typhi-murium			15		2		5	6	1	1			1	1				1	7	1		1				3	1	3	49	675	typhi-murium
typhi-murium v cop								1	3										6										10	123	typhi-murium v cop
typhi-suis			1																										1	9	typhi-suis
urbana												1									1								2	13	urbana
worthington					2		1	2					1																6	101	worthington
untypable group B																										1			1	18	untypable group B
unknown															4					1						1			6	15	unknown
TOTAL	2	2	102	1	10	3	31	56	15	1	4	2	34	55	10	7	2	1	47	6	2	41	2	6	2	4	4	15	5	472	6,104	TOTAL

Source: National Animal Disease Laboratory, Ames, Iowa, weekly Salmonella Reports from individual states, and US-FDA-Div of Microbiology, Washington, D.C.

(NY-A - New York - Albany)

*Includes September late report from US-FDA.

TABLE VI
OTHER SEROTYPES REPORTED DURING 1967
FROM NONHUMAN SOURCES

SEROTYPE	MONTH(S)	REPORTING CENTER(S)	NUMBER OF ISOLATIONS
adelaide	Jun	Ill	1
albuquerque	Sep	Kan	7
amager	Mar	Ill	4
arkansas	Mar	La	1
berlin	May	Pa	1
berta	Jan	Ill(1)	
	Feb-Jun-Jul	Ariz(11)	12
bonariensis	Aug	Kan	1
california	Jan-Aug	Ohio(2)	
	Feb-Jul	Ind(2)	
	Mar	Ill(1)	
	May	Cal(1)	
	May	Iowa(2)	
	Jun	Tenn(1)	
	Jul	Me(1)	
	Sep	Minn(1)	11
cagona	Apr	Ind(1)	
	Jul	Minn(1)	2
carrau	Jan	La(1)	
	Aug	Cal(1)	2
champaign	Feb	Minn(1)	
	Jul	Mich(2)	3
cholerae-suis	Jan	Cal(1)	
	Jan-Jun-Jul	Ohio(5)	
	Mar	Va(1)	7
corvallis	Jan-Feb	La	3
decatur	Aug	Kan	5
duesseldorf	Mar	Ohio(8)	
	Apr	Mich(1)	9
duisburg	Jun	Ohio	1
eastbourne	Jan	Minn(1)	
	Sep	Mich(1)	2
gallinarum	Jan	Ark(2)	
	May-Jun	Pa(5)	7
gaminara	Apr-Jul-Sep	Cal(3)	
	Apr	Neb(1)	
	Jun	Tex(1)	
	Jul	Ill(1)	
	Jul	La(1)	7
gatow	Apr	Wash(4)	
	May	Kan(1)	5
grumpensis	Jan	La(2)	
	Jan	Mich(1)	3
habana	Apr	Fla	2
halmstad	Jun-Jul	Mich(5)	
	Sep	Minn(1)	6
hartford	Jan	Hai	1
hato	Jun	La	1

TABLE VI
OTHER SEROTYPES REPORTED DURING 1967
FROM NONHUMAN SOURCES (CONTINUED)

SEROTYPE	MONTH(S)	REPORTING CENTER(S)	NUMBER OF ISOLATIONS
irumu	Apr-Aug	Hai	2
kottbus	Jun	Cal	1
litchfield	Feb-Mar-May	Va	3
madelia	Jul	DC	1
manchester	Jul	NJ	1
minneapolis	Feb-Jun-Jul	Ohio(19)	
	May	Okla(12)	
	Jul	Ill(1)	
	Aug	Cal(1)	33
mission	May	Ohio	1
mokola	Feb	La	1
muenster	Jan	Ark(2)	
	Jan-Feb	La(4)	
	Sep	Ind(1)	7
ness-ziona	Jul	NC	2
new-brunswick	Aug	Kan(1)	
	Sep	Ill(1)	2
new-haw	Feb	Iowa(1)	
	Apr	Ill(1)	2
norwich	Aug	Tex	1
okerara	Feb	La	1
oslo	Feb	Fla	2
panama	Jan-Feb-Mar-Apr	Ark(40)	
	Feb	DC(1)	
	Mar	Mo(1)	
	Jul	Mass(2)	44
paratyphi-B	Jun	Wash(1)	
	Jul	Mass(1)	
	Jul	Tenn(1)	3
pomona	Jan	La	1
poona	Jan	Fla(4)	
	Jan	Ill(1)	
	Jan	Neb(7)	
	Feb	Mo(1)	
	Apr	Mich(1)	14
pullorum	Feb-Mar	Pa(4)	
	Feb-Mar	Vt(2)	
	Feb-Mar	Va(2)	
	Mar	NJ(1)	
	Mar-May	Okla(6)	
	Apr-Jun	Wisc(2)	
	May	Minn(1)	
	May	ND(1)	
	May	Ohio(5)	
	Jun	Ind(2)	
	Jul	Mo(1)	
	Aug	Mich(3)	
	Aug	Tex(1)	31

TABLE VI
OTHER SEROTYPES REPORTED DURING 1967
FROM NONHUMAN SOURCES (CONTINUED)

SEROTYPE	MONTH(S)	REPORTING CENTER(S)	NUMBER OF ISOLATIONS
putten	Jun	Cal	1
redlands	Feb	La	1
rubislaw	Jan-Feb-Mar	La(3)	
	Apr	Kan(10)	
	Apr-Jul	Tex(2)	15
saphra	Jun	Tex	1
shubra	Feb	La	1
simsbury	Mar	Mo(1)	
	Apr	Kan(2)	3
stanley	Apr	La	1
sundsvall	Jul	Ariz	2
taksony	Jan-Feb	Utah(2)	
	Aug	Cal(1)	3
tucson	Feb	Cal	1
tuindorp	Feb	Ill(1)	
	Apr	Cal(1)	2
typhi	Jul	Cal	1
vejle	Feb	La	1
weltevreden	Sep	Hai	1
westhampton	Jan-Mar	Ill(2)	
	Jan-Feb	La(9)	
	May	Minn(2)	
	Jun	SD(1)	
	Jul	Kan(5)	19
wichita	Feb	Utah	1
zanzibar	May	NJ(1)	
	Jul	DC(2)	3
zeist	Sep	Conn	1
TOTAL			315