NATIONAL COMMUNICABLE DISEASE CENTER

Morbidity and Mortality

Vol. 18, No. 34

WEEKLY REPORT

For Week Ending August 23, 1969

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE / PUBLIC HEALTH SERVICE / HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

DATE OF RELEASE: AUGUST 29, 1969 – ATLANTA, GEORGIA 30333

EPIDEMIOLOGIC NOTES AND REPORTS
ISOLATION AND CHARACTERIZATION OF "LASSA" VIRUS – Connecticut and New York

A virus has been isolated from sera of two nurses, who died, and from serum and pleural fluid of a third nurse, who recovered, from a febrile illness. All three were American nurses who had been working for the Sudan Interior Mission in Nigeria. Their clinical disease included fever, pharyngeal ulcers, pneumonitis, pleural effusion, rash with petechiae, albuminuria, leukopenia, azotemia, and, in one instance, terminal gastrointestinal hemorrhage. A fourth case occurred in a laboratory investigator who was working with the virus.

The first nurse (Case 1) became ill on Jan. 20, 1969, while working at a mission station in Lassa in Biu-Mubi region of Nigeria; she was returned by air to the mission hospital at Jos on January 25 and died there on January 26. Serum taken at postmortem yielded a virus on later investigation. The second nurse (Case 2), who had cared for the first nurse, became ill on February 3. At a later date, virus was isolated from her serum taken on February 6 and on the day of her death, February 13. The third nurse (Case 3) became ill on February 20, after attending the other two nurses. While acutely ill, she was flown to New

(Continued on page 294)

CONTENTS

TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	34th WEEK ENDED		MEDIAN	CUMULATIVE, FIRST 34 WEEKS		
	August 23, 1969	August 24, 1968	1964 - 1968	1969	1968	MEDIAN 1964 - 1968
Aseptic meningitis	146	167	122	1,575	1,957	1,477
Brucellosis	3	9	9	138	141	164
Diphtheria	6	3	2	100	106	106
Encephalitis, primary:						
Arthropod-borne & unspecified	26	45	50	693	697	1,077
Encephalitis, post-infectious	10	10	10	231	353	560
Hepatitis, serum	109	95	638	3,446	2,789	26,005
Hepatitis, infectious	862	889		30,309	28,659	
Malaria	65	33	12	1,796	1,379	230
Measles (rubeola)	147	127	491	20,007	19,307	188,165
Meningococcal infections, total	29	49	31	2,300	1,944	1,944
Civilian	28	49	- - -	2,097	1,769	- - -
Military	1	–	- - -	203	175	- - -
Mumps	500	566	- - -	66,983	123,339	- - -
Poliomyelitis, total	1	–	–	10	38	40
Paralytic	1	–	–	9	38	38
Rubella (German measles)	320	250	- - -	48,361	43,076	- - -
Streptococcal sore throat & scarlet fever	3,747	4,454	4,147	293,965	292,417	292,417
Tetanus	–	5	5	92	97	141
Tularemia	2	4	5	92	130	130
Typhoid fever	5	6	8	181	211	257
Typhus, tick-borne (Rky. Mt. spotted fever)	15	13	13	340	209	200
Rabies in animals	53	66	75	2,355	2,393	2,983

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	3	Rabies in man:	1
Botulism:	11	Rubella congenital syndrome:	6
Leptospirosis: Ga.-2, La.-1, Mich.-1	46	Trichinosis:	154
Plague:	3	Typhus, murine: Ohio-2	34
Psittacosis: Calif.-2, Ore.-1	26	Poliomyelitis, non-paralytic:	1

"LASSA" VIRUS – *(Continued from front page)*

York City and hospitalized on March 4. Virus was recovered from sera obtained on March 6, 15, and 16 and also from pleural fluid on March 6. No virus was found in sera obtained on March 30 or April 8 or in throat and fecal specimens on April 8, at which time, she was gradually recovering. The laboratory investigator (Case 4) became ill in June. Early in his illness, he was given a transfusion of 500 ml of plasma from the nurse who had recovered. Virus was isolated from serum, throat swabs, and urine of the fourth patient; virus excretion in urine continued for over 3 weeks. After serious illness, he recovered.

The virus from the serum of Case 3 had an incubation period of 6 to 8 days in VERO cell cultures, which shortened to 4 days on passage. Basophilic cytoplasmic aggregates were seen in infected cells but not in control cells. The viral agent was inactivated by sodium deoxycholate and passed a 220 $m\mu$ filter with no loss of titer, but only traces passed the 100 $m\mu$ filter. The agent did not hemadsorb onto goose or guinea pig erythrocytes at pH 7.2 or hemagglutinate goose red blood cells after acetone extraction of infected culture fluid. A complement fixation (CF) antigen from VERO cell fluid reacted from >1:64 with convalescent serum from Case 3 and was negative with acute serum. Convalescent serum neutralized 2.0 log TCD_{50} of virus. Acute serum from Case 3 did not kill baby mice on intracerebral inoculation, although the mice did develop detectable CF antibody. Adult mice died after intracerebral inoculation with high titer tissue culture material, but baby mice did not.

Infectivity of the virus was unchanged when titrated in the presence of BUDR (5-Bromo-2'-Deoxyuridine). The development of vaccinia, used as a control, was inhibited whereas that of Mayaro (a RNA virus) remained unaffected. The virus was inactivated by 0.1 percent BPL (beta-propiolactone). It did not multiply in *Aedes albopictus* cell culture.

Complement fixation tests of serum from Case 3 with rabies, LCM (Lymphocytic choriomeningitis), herpes, poxvirus, NDV (New Castle Disease Virus), EMC (Encephalomyocarditis virus), Marburg, Simian hemorrhagic fever, and 104 different arboviral antigens – among which included Omsk hemorrhagic fever, yellow fever, Congo and all known Tacaribe group agents – were negative. The reactions between antisera for epizootic hemorrhagic disease of deer (New Jersey), group Tacaribe, Rift Valley fever, Nairobi sheep disease, Simian hemorrhagic fever and Marburg viruses, and a tissue culture antigen prepared from the unknown virus were also negative. Further studies are in progress.

(Reported by J. Casals, M.D., and S. Buckley, M.D., Yale Arbovirus Research Unit, Yale University School of Medicine; John D. Frame, M.D., Adjunct Assistant Professor of Tropical Medicine and School of Public Health and Administrative Medicine, Columbia University; Edgar Leifer, M.D., Physician, Columbia Presbyterian Hospital, New York; and the New York City Department of Health, New York State Department of Health, and Connecticut State Department of Health.)

CUTANEOUS ANTHRAX – Rhode Island

In July 1969, cutaneous anthrax was confirmed in a 64-year-old man, a mechanic at a Rhode Island company that scours and cards camel's hair and cashmere for spinning into yarn by other companies. On July 17, while cleaning the rollers of a carding machine, this man sustained several cuts on his right hand. By July 19, all the cuts had healed except for the one on his right index finger, which progressed from a small puritic papule to a blue-black vesicle. On July 24, he saw a dermatologist who diagnosed cutaneous anthrax and hospitalized him. The diagnosis was subsequently confirmed by culture. On admission, the man appeared well, was afebrile, had no axillary adenopathy, but had a 1.5 cm nontender puritic lesion on his right index finger. By July 25, he had developed several 2 to 3 cm nontender axillary nodes, and by July 27, he developed marked swelling of the finger and dorsum of the wrist and a low grade fever of 100°F. He was treated with penicillin, made an uneventful recovery, and was discharged on August 2.

Although no cases of anthrax had been recorded by the company in the last 10 years, two other probable cases were found during the investigation of this confirmed case. Both men, one with onset in February and one in April, had had a slow-healing lesion that retrospectively seemed compatible with cutaneous anthrax; both were employed as mechanics, performing the same work as the confirmed case, and both had incurred minor injuries to the area where the lesions subsequently developed.

The company scours and cards raw hair, processes that clean and subsequently separate and aleign the fibers producing a thick loosely packed rope. The raw hair is obtained directly from Iran and Afghanistan and a considerable amount is obtained from Mongolia and other countries through a company in Belgium. Investigation found that the processing areas at the Rhode Island Company are dusty, inadequately ventilated, and cleaned sporadically. Of 12 environmental samples collected, 7 were positive for *Bacillus anthracis*. Of 13 hair samples collected, 4 were positive; 2 of these were unprocessed hair and 2 had been scoured. After additional epidemiologic investigation is completed, appropriate recommendations will be made.

(Reported by Joseph E. Cannon, M.D., M.P.H., Director, Rhode Island Department of Health; Epidemiological Aid Services Laboratory, Epidemiology Program, NCDC; and an EIS Officer.)

(Continued on page 300)

STAPHYLOCOCCAL FOOD POISONING – Nashville, Tennessee

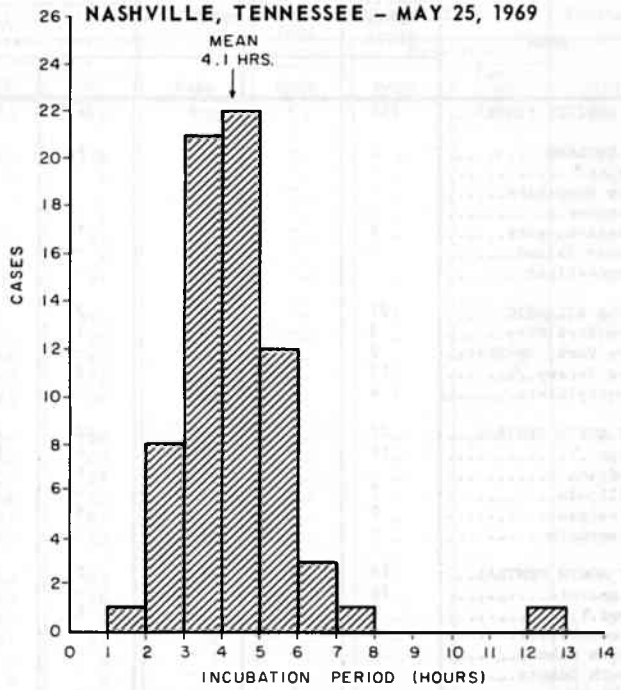
On May 25, 1969, an outbreak of gastroenteritis occurred among 800 persons attending an organization's annual picnic in Nashville, Tennessee. A group of 88 people, consisting primarily of persons who called an organization official to complain of illness, were interviewed by telephone. Seventy of them reported becoming ill 3 to 5 hours after the picnic with symptoms of malaise, weakness, anorexia, vomiting, or diarrhea which lasted from 4 to 24 hours (Figure 1). Of 35 persons who sought medical assistance at local hospitals, 15 were hospitalized overnight. There were no deaths.

Barbecued pork and/or sauce were implicated by food histories as the vehicles of infection (Table 1). One woman who did not attend the picnic developed gastroenteritis 5 hours after eating barbecued pork brought to her from the picnic; she ate no other item from that meal.

The pork was purchased frozen on May 20 by a caterer who refrigerated it at 36°F. On May 21 he took it for barbecuing to a man in a nearby town who kept the pork overnight in a refrigerated chest. On May 22 he barbecued it unwrapped for 12 hours and then wrapped in aluminum foil for another 12 hours. After deboning, the pork was picked up by the caterer and returned to Nashville, where most of it was cut into small pieces, placed in shallow, covered, disposable aluminum pans, and refrigerated. About 10 p.m. on May 24, it was taken out of the refrigerator and brought to room temperature overnight. On the morning of May 25, a boiling barbecue sauce was poured over the meat, and this mixture was placed in thermal containers and capped. The barbecue sauce had been prepared by the caterer 3 months earlier and served on several occasions without known ensuing illness. At the picnic the meat was transferred to clean disposable aluminum serving pans.

Staphylococcus aureus organisms were recovered from all four samples of leftover pork and also from chicken and coleslaw from plates containing barbecue sauce. The average staphylococcal count per gram of the latter two items, however, was much less than that for the leftover barbecued pork. Two samples of barbecued pork not removed from the refrigerator and not handled by the caterer were also positive for *S. aureus*. *S. aureus* was also cultured from a nasal swab of the man who barbecued the pork. All *S. aureus* isolated from the food items and nasal culture of the foodhandler were phage type 53/83/85, and all produced enterotoxin A, exclusively.

Figure 1
CASES OF FOODBORNE GASTROENTERITIS BY INCUBATION PERIOD
NASHVILLE, TENNESSEE – MAY 25, 1969



(Reported by Cecil B. Tucker, M.D., Director, Bureau of Preventive Health Services, and J. B. Barrick, Director, Division of Biological Laboratories, Tennessee Department of Public Health; Joseph M. Bistowish, M.D., Director, Davidson County Health Department; and an EIS Officer.)

Table 1
Food History Date from Persons Attending Picnic, Nashville, Tennessee, May 25, 1969

Food or Beverage	Group A Persons Who Ate Specified Food				Group B Persons Who Did Not Eat Specified Food			
	Ill	Not Ill	Total	Attack Rate (Percent)	Ill	Not Ill	Total	Attack Rate (Percent)
Barbecued pork	70	18	88	79.5	0	26	26	0
Barbecue Sauce	59	12	71	83.1	11	32	43	25.6
Coleslaw	48	32	80	60.0	22	12	34	64.7
Beans	60	39	99	60.6	10	5	15	66.7
Bread	59	38	97	60.8	11	6	17	64.7
Butter	15	14	29	51.7	55	30	85	64.7
Chicken	14	29	43	32.6	56	15	71	78.9
Ice Cream	50	30	80	62.5	20	14	34	58.8
Lemonade	12	9	21	57.1	58	35	93	62.4
Cola	53	34	87	60.9	17	10	27	63.0
Orange Drink	10	4	14	71.4	60	40	100	60.0
Coffee	12	6	18	66.7	58	38	96	60.4

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

AUGUST 23, 1969 AND AUGUST 24, 1968 (34th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	DIPHTHERIA	ENCEPHALITIS			HEPATITIS			MALARIA	
				Primary including unsp. cases		Post-Infectious	Serum	Infectious			
	1969	1969	1969	1969	1968	1969	1969	1969	1968	1969	Cum. 1969
UNITED STATES...	146	3	6	26	45	10	109	862	889	65	1,796
NEW ENGLAND.....	5	–	–	1	–	–	1	64	60	–	64
Maine*	–	–	–	–	–	–	–	5	–	–	6
New Hampshire.....	–	–	–	–	–	–	–	6	–	–	2
Vermont.....	–	–	–	–	–	–	–	1	3	–	–
Massachusetts.....	5	–	–	1	–	–	–	31	33	–	42
Rhode Island.....	–	–	–	–	–	–	–	8	8	–	3
Connecticut.....	–	–	–	–	–	–	1	13	16	–	11
MIDDLE ATLANTIC.....	21	–	–	3	9	3	49	144	146	14	213
New York City.....	3	–	–	1	–	–	31	57	55	1	18
New York, up-State.	2	–	–	–	–	2	3	35	31	1	32
New Jersey*	12	–	–	2	5	–	11	32	23	4	83
Pennsylvania.....	4	–	–	–	4	1	4	20	37	8	80
EAST NORTH CENTRAL...	27	–	–	12	13	3	13	118	120	12	183
Ohio*	11	–	–	6	12	–	3	30	42	–	17
Indiana.....	–	–	–	1	–	–	–	9	5	2	17
Illinois.....	7	–	–	–	–	2	–	24	35	8	109
Michigan.....	9	–	–	5	1	1	10	43	32	2	39
Wisconsin.....	–	–	–	–	–	–	–	12	6	–	1
WEST NORTH CENTRAL...	19	3	–	1	4	–	1	30	47	2	121
Minnesota.....	16	–	–	–	–	–	1	10	19	–	7
Iowa*	1	2	–	1	2	–	–	8	2	–	13
Missouri.....	2	–	–	–	–	–	–	3	14	1	32
North Dakota.....	–	–	–	–	1	–	–	2	–	–	3
South Dakota.....	–	–	–	–	–	–	–	–	1	–	–
Nebraska.....	–	1	–	–	–	–	–	4	5	–	3
Kansas.....	–	–	–	–	1	–	–	3	6	1	63
SOUTH ATLANTIC.....	34	–	1	2	4	2	8	106	74	12	496
Delaware.....	–	–	–	–	–	–	–	3	3	–	3
Maryland.....	12	–	–	–	–	1	1	11	15	1	27
Dist. of Columbia..	–	–	–	–	–	–	1	1	–	–	1
Virginia*	2	–	–	2	3	–	–	15	14	2	20
West Virginia.....	5	–	–	–	–	–	–	3	7	–	–
North Carolina.....	–	–	–	–	–	–	–	13	7	3	226
South Carolina.....	8	–	–	–	1	–	–	2	2	2	44
Georgia.....	–	–	–	–	–	–	–	5	–	3	149
Florida.....	7	–	1	–	–	1	6	53	26	1	26
EAST SOUTH CENTRAL...	4	–	1	3	2	1	1	61	46	7	74
Kentucky.....	–	–	–	–	–	1	–	30	24	2	56
Tennessee.....	1	–	–	2	1	–	1	22	13	–	–
Alabama.....	3	–	–	1	–	–	–	3	2	5	16
Mississippi.....	–	–	1	–	1	–	–	6	7	–	2
WEST SOUTH CENTRAL...	3	–	4	–	2	–	1	54	55	4	100
Arkansas.....	–	–	–	–	–	–	–	–	4	–	8
Louisiana.....	–	–	4	–	1	–	–	11	11	–	36
Oklahoma*	–	–	–	–	1	–	–	8	7	4	41
Texas.....	3	–	–	–	–	–	1	35	33	–	15
MOUNTAIN.....	2	–	–	1	3	–	1	37	66	–	121
Montana*	2	–	–	–	–	–	1	4	5	–	3
Idaho.....	–	–	–	1	1	–	–	1	1	–	3
Wyoming.....	–	–	–	–	–	–	–	–	2	–	–
Colorado.....	–	–	–	–	2	–	–	11	38	–	102
New Mexico.....	–	–	–	–	–	–	–	6	–	–	7
Arizona.....	–	–	–	–	–	–	–	13	13	–	1
Utah.....	–	–	–	–	–	–	–	2	6	–	1
Nevada.....	–	–	–	–	–	–	–	–	1	–	4
PACIFIC.....	31	–	–	3	8	1	34	248	275	14	424
Washington.....	8	–	–	–	–	–	–	14	22	–	5
Oregon.....	2	–	–	–	–	–	–	23	7	–	9
California.....	21	–	–	3	8	1	34	206	245	14	326
Alaska.....	–	–	–	–	–	–	–	1	1	–	2
Hawaii.....	–	–	–	–	–	–	–	4	–	–	82
Puerto Rico*	–	–	–	–	–	1	–	20	23	–	2

*Delayed reports: Aseptic meningitis: Mont. 1
Brucellosis: Va. 20
Encephalitis, primary: N.J. delete 1
Hepatitis, infectious: Me. 15, Ohio delete 1, Okla. delete 1, P.R. 2
Malaria: Me. 2, N.J. delete 1, Iowa 4

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

AUGUST 23, 1969 AND AUGUST 24, 1968 (34th WEEK) - CONTINUED

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS	POLIOMYELITIS			RUBELLA
		Cumulative			Cumulative			Total	Paralytic		
	1969	1969	1968	1969	1969	1968	1969	1969	1969	Cum. 1969	1969
UNITED STATES...	147	20,007	19,307	29	2,300	1,944	500	1	1	9	320
NEW ENGLAND.....	11	1,094	1,143	2	82	116	45	–	–	1	25
Maine.*.....	–	8	37	–	6	6	6	–	–	–	6
New Hampshire.....	–	238	141	–	2	7	–	–	–	–	1
Vermont.....	–	3	2	–	–	1	–	–	–	–	–
Massachusetts.....	11	219	355	–	33	63	12	–	–	–	4
Rhode Island.....	–	23	5	1	10	8	6	–	–	–	5
Connecticut.....	–	603	603	1	31	31	21	–	–	1	9
MIDDLE ATLANTIC.....	33	7,430	3,943	6	377	349	72	1	1	1	32
New York City.....	14	4,876	2,027	–	73	70	70	–	–	–	15
New York, Up-State.	2	593	1,215	2	68	63	NN	–	–	–	5
New Jersey.....	9	882	591	3	153	122	2	–	–	–	7
Pennsylvania.....	8	1,079	110	1	83	94	NN	1	1	1	5
EAST NORTH CENTRAL...	20	2,119	3,721	2	314	228	123	–	–	–	84
Ohio.....	2	369	291	1	118	63	15	–	–	–	8
Indiana.....	1	466	657	1	35	27	32	–	–	–	23
Illinois.....	6	485	1,356	–	44	51	17	–	–	–	–
Michigan.....	2	240	264	–	95	67	21	–	–	–	37
Wisconsin.....	9	559	1,153	–	22	20	38	–	–	–	16
WEST NORTH CENTRAL...	3	514	379	2	118	103	13	–	–	1	11
Minnesota.....	1	6	16	–	25	26	–	–	–	–	–
Iowa.....	–	328	97	1	16	6	7	–	–	–	5
Missouri.....	–	22	81	–	51	32	2	–	–	–	–
North Dakota.....	1	12	131	1	1	3	1	–	–	–	3
South Dakota.....	–	3	4	–	1	5	NN	–	–	–	–
Nebraska.....	1	136	40	–	9	6	3	–	–	–	3
Kansas.....	–	7	10	–	15	25	–	–	–	1	–
SOUTH ATLANTIC.....	16	2,473	1,480	4	399	392	54	–	–	1	45
Delaware.....	–	373	15	–	8	8	3	–	–	–	–
Maryland.....	–	74	95	–	36	30	12	–	–	–	6
Dist. of Columbia..	–	–	6	–	9	14	–	–	–	–	6
Virginia.....	1	883	295	1	50	33	3	–	–	–	5
West Virginia.....	6	191	281	–	18	10	18	–	–	–	16
North Carolina.....	–	313	281	–	66	76	NN	–	–	–	–
South Carolina.*...	6	116	12	–	55	56	7	–	–	–	–
Georgia.....	–	1	4	1	70	76	–	–	–	–	–
Florida.....	3	522	491	2	87	89	11	–	–	1	12
EAST SOUTH CENTRAL...	–	107	488	1	141	170	35	–	–	1	9
Kentucky.....	–	63	99	1	50	72	12	–	–	–	2
Tennessee.....	–	17	61	–	53	52	23	–	–	–	5
Alabama.....	–	4	94	–	23	25	–	–	–	1	1
Mississippi.....	–	23	234	–	15	21	–	–	–	–	1
WEST SOUTH CENTRAL...	36	4,426	4,728	5	311	301	60	–	–	4	34
Arkansas.....	–	16	2	–	29	20	1	–	–	–	–
Louisiana.....	–	120	21	–	80	86	–	–	–	–	–
Oklahoma.....	–	136	112	1	30	49	4	–	–	–	–
Texas.....	36	4,154	4,593	4	172	146	55	–	–	4	34
MOUNTAIN.....	16	834	970	–	43	30	28	–	–	–	11
Montana.*.....	–	16	58	–	8	3	–	–	–	–	–
Idaho.....	–	89	20	–	8	11	–	–	–	–	–
Wyoming.....	–	–	51	–	–	1	–	–	–	–	–
Colorado.....	4	140	499	–	7	10	2	–	–	–	5
New Mexico.....	1	242	97	–	6	–	7	–	–	–	1
Arizona.....	11	338	219	–	10	1	13	–	–	–	4
Utah.....	–	8	21	–	2	1	6	–	–	–	1
Nevada.....	–	1	5	–	2	3	–	–	–	–	–
PACIFIC.....	12	1,010	2,455	7	515	255	70	–	–	–	69
Washington.....	–	59	515	–	54	37	5	–	–	–	5
Oregon.....	–	198	502	–	15	20	15	–	–	–	4
California.....	10	708	1,401	7	425	185	44	–	–	–	27
Alaska.....	–	8	2	–	11	2	1	–	–	–	1
Hawaii.....	2	37	35	–	10	11	5	–	–	–	32
Puerto Rico.....	15	1,419	397	–	19	19	5	–	–	–	5

*Delayed reports: Measles: Me. 1, S.C. delete 2
Meningococcal infections: Mont. delete 1
Mumps: Me. 5
Rubella: Me. 4, S.C. 2

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

AUGUST 23, 1969 AND AUGUST 24, 1968 (34th WEEK) - CONTINUED

AREA	STREPTOCOCCAL SORE THROAT & SCARLET FEVER	TETANUS		TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
	1969	1969	Cum. 1969	1969	Cum. 1969	1969	Cum. 1969	1969	Cum. 1969	1969	Cum. 1969
UNITED STATES...	3,747	–	92	2	92	5	181	15	340	53	2,355
NEW ENGLAND.....	405	–	–	–	14	1	8	–	–	–	18
Maine.*.....	17	–	–	–	–	–	1	–	–	–	6
New Hampshire.....	20	–	–	–	–	–	–	–	–	–	4
Vermont.....	–	–	–	–	14	–	–	–	–	–	2
Massachusetts.....	59	–	–	–	–	1	5	–	–	–	1
Rhode Island.....	43	–	–	–	–	–	1	–	–	–	–
Connecticut.....	266	–	–	–	–	–	1	–	–	–	5
MIDDLE ATLANTIC.....	153	–	13	–	4	–	19	3	37	7	115
New York City.....	14	–	6	–	1	–	9	–	–	–	–
New York, Up-State.	117	–	3	–	3	–	5	–	5	6	107
New Jersey.....	NN	–	2	–	–	–	1	2	11	–	–
Pennsylvania.....	22	–	2	–	–	–	4	1	21	1	8
EAST NORTH CENTRAL...	247	–	12	–	7	1	21	1	2	10	164
Ohio.....	34	–	1	–	–	1	8	–	–	6	50
Indiana.....	62	–	–	–	1	–	–	–	–	2	44
Illinois.....	58	–	7	–	2	–	9	1	2	1	27
Michigan.....	51	–	4	–	–	–	4	–	–	–	5
Wisconsin.....	42	–	–	–	4	–	–	–	–	1	38
WEST NORTH CENTRAL...	211	–	7	–	12	–	8	–	8	10	442
Minnesota.....	3	–	2	–	–	–	3	–	–	4	116
Iowa.....	24	–	–	–	–	–	–	–	7	2	64
Missouri.....	3	–	1	–	8	–	3	–	–	3	114
North Dakota.....	89	–	–	–	–	–	–	–	–	–	55
South Dakota.....	8	–	–	–	–	–	–	–	1	–	24
Nebraska.....	69	–	–	–	1	–	1	–	–	–	11
Kansas.....	15	–	4	–	3	–	1	–	–	1	58
SOUTH ATLANTIC.....	449	–	18	–	20	–	29	4	191	11	601
Delaware.....	–	–	–	–	–	–	2	–	3	–	–
Maryland.....	40	–	1	–	–	–	4	1	42	2	3
Dist. of Columbia..	1	–	2	–	–	–	1	–	1	–	–
Virginia.....	156	–	–	–	4	–	–	–	56	1	305
West Virginia.....	67	–	1	–	2	–	1	–	5	1	91
North Carolina.....	NN	–	2	–	5	–	6	1	46	–	4
South Carolina*....	45	–	1	–	2	–	1	2	26	–	–
Georgia.....	2	–	2	–	3	–	7	–	12	3	60
Florida.....	138	–	9	–	4	–	7	–	–	4	138
EAST SOUTH CENTRAL...	765	–	15	–	9	2	22	4	44	3	340
Kentucky.....	77	–	6	–	–	–	3	–	6	–	178
Tennessee.....	589	–	4	–	8	2	16	3	36	–	114
Alabama.....	39	–	4	–	–	–	1	–	1	3	45
Mississippi.....	60	–	1	–	1	–	2	1	1	–	3
WEST SOUTH CENTRAL...	530	–	17	–	16	–	21	3	39	5	326
Arkansas.....	5	–	1	–	1	–	10	–	6	–	24
Louisiana.....	1	–	6	–	4	–	2	–	–	–	26
Oklahoma.*.....	61	–	1	–	6	–	–	3	26	2	48
Texas.....	463	–	9	–	5	–	9	–	7	3	228
MOUNTAIN.....	798	–	3	2	10	–	22	–	14	2	106
Montana.....	21	–	1	–	–	–	–	–	–	–	–
Idaho.....	81	–	–	–	–	–	3	–	4	–	–
Wyoming.....	12	–	–	–	2	–	5	–	–	1	51
Colorado.....	349	–	2	–	–	–	3	–	8	–	3
New Mexico.....	204	–	–	–	1	–	5	–	–	1	14
Arizona.....	76	–	–	–	–	–	5	–	–	–	22
Utah.....	55	–	–	2	7	–	–	–	2	–	4
Nevada.....	–	–	–	–	–	–	1	–	–	–	12
PACIFIC.....	189	–	7	–	–	1	31	–	5	5	243
Washington.....	61	–	1	–	–	1	2	–	3	1	4
Oregon.....	55	–	–	–	–	–	6	–	–	–	3
California.....	---	–	6	–	–	–	23	–	2	4	236
Alaska.....	36	–	–	–	–	–	–	–	–	–	–
Hawaii.....	37	–	–	–	–	–	–	–	–	–	–
Puerto Rico.....	–	1	5	–	–	–	6	–	–	–	20

*Delayed reports: SST: Me. 2
Typhoid: S.C. delete 1, Okla. delete 1

Week No. 34

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDED AUGUST 23, 1969

(By place of occurrence and week of filing certificate. Excludes fetal deaths)

Area	All Causes		Pneumonia and Influenza	Under 1 year
	All Ages	65 years and over	All Ages	All Causes
NEW ENGLAND:	705	423	34	37
Boston, Mass.	221	124	9	13
Bridgeport, Conn.	62	42	5	3
Cambridge, Mass.	25	17	1	1
Fall River, Mass.	29	20	1	1
Hartford, Conn.	60	30	–	7
Lowell, Mass.	32	20	1	2
Lynn, Mass.	16	13	1	–
New Bedford, Mass.	23	16	–	–
New Haven, Conn.	59	34	1	–
Providence, R. I.	38	27	2	2
Somerville, Mass.	8	3	–	–
Springfield, Mass.	47	30	5	2
Waterbury, Conn.	25	17	–	1
Worcester, Mass.	60	30	8	5
MIDDLE ATLANTIC:	3,101	1,745	130	151
Albany, N. Y.	56	30	2	4
Allentown, Pa.	31	18	5	3
Buffalo, N. Y.	139	76	6	9
Camden, N. J.	45	20	4	3
Elizabeth, N. J.	28	15	1	–
Erie, Pa.	35	18	–	1
Jersey City, N. J.	59	32	6	3
Newark, N. J.	71	38	–	5
New York City, N. Y.	1,544	867	67	64
Paterson, N. J.	51	27	2	5
Philadelphia, Pa.	407	228	3	28
Pittsburgh, Pa.	189	98	15	11
Reading, Pa.	43	25	–	2
Rochester, N. Y.	120	73	6	4
Schenectady, N. Y.	31	23	7	1
Scranton, Pa.	32	23	–	–
Syracuse, N. Y.	104	62	–	7
Trenton, N. J.	53	27	2	–
Utica, N. Y.	27	20	1	–
Yonkers, N. Y.	36	25	3	1
EAST NORTH CENTRAL:	2,521	1,409	72	144
Akron, Ohio	69	42	–	1
Canton, Ohio	42	25	5	2
Chicago, Ill.	692	368	23	35
Cincinnati, Ohio	143	81	5	11
Cleveland, Ohio	199	104	3	13
Columbus, Ohio	123	55	1	7
Dayton, Ohio	76	44	5	6
Detroit, Mich.	314	168	3	20
Evansville, Ind.	57	38	3	5
Flint, Mich.	53	25	–	5
Fort Wayne, Ind.	44	32	4	1
Gary, Ind.	36	17	5	2
Grand Rapids, Mich.	54	39	3	3
Indianapolis, Ind.	176	97	1	8
Madison, Wis.	41	29	2	–
Milwaukee, Wis.	124	77	–	6
Peoria, Ill.	33	18	–	2
Rockford, Ill.	36	19	3	3
South Bend, Ind.	21	15	3	1
Toledo, Ohio	118	74	3	7
Youngstown, Ohio	70	42	–	6
WEST NORTH CENTRAL:	745	465	15	37
Des Moines, Iowa	51	31	–	1
Duluth, Minn.	30	19	1	1
Kansas City, Kans.	31	14	–	6
Kansas City, Mo.	125	72	1	9
Lincoln, Nebr.	19	13	–	2
Minneapolis, Minn.	108	58	3	7
Omaha, Nebr.	51	32	–	2
St. Louis, Mo.	202	136	2	3
St. Paul, Minn.	88	67	6	3
Wichita, Kans.	40	23	2	3
SOUTH ATLANTIC:	1,050	523	37	61
Atlanta, Ga.	117	48	3	9
Baltimore, Md.	195	98	4	8
Charlotte, N. C.	43	19	2	3
Jacksonville, Fla.	64	25	1	5
Miami, Fla.	94	49	1	5
Norfolk, Va.	45	19	3	6
Richmond, Va.	91	50	7	4
Savannah, Ga.	32	19	5	1
St. Petersburg, Fla.	81	61	3	2
Tampa, Fla.	46	19	4	6
Washington, D. C.	197	90	3	10
Wilmington, Del.	45	26	1	2
EAST SOUTH CENTRAL:	620	329	34	32
Birmingham, Ala.	105	58	–	3
Chattanooga, Tenn.	64	37	7	2
Knoxville, Tenn.	27	10	–	1
Louisville, Ky.	139	73	20	9
Memphis, Tenn.	127	68	3	7
Mobile, Ala.	35	19	3	3
Montgomery, Ala.	31	12	–	3
Nashville, Tenn.	92	52	1	4
WEST SOUTH CENTRAL:	1,212	645	41	60
Austin, Tex.	48	30	4	2
Baton Rouge, La.	35	22	1	1
Corpus Christi, Tex.	49	26	1	4
Dallas, Tex.	164	82	3	10
El Paso, Tex.	38	20	2	4
Fort Worth, Tex.	79	43	1	3
Houston, Tex.	252	123	9	10
Little Rock, Ark.	46	24	3	3
New Orleans, La.	164	76	2	12
Oklahoma City, Okla.	64	35	–	4
San Antonio, Tex.	158	91	5	5
Shreveport, La.	41	23	2	2
Tulsa, Okla.	74	50	8	–
MOUNTAIN:	416	221	20	30
Albuquerque, N. Mex.	48	21	5	2
Colorado Springs, Colo.	23	14	5	–
Denver, Colo.	105	57	2	12
Ogden, Utah	14	9	3	2
Phoenix, Ariz.	100	56	–	7
Pueblo, Colo.	10	5	2	2
Salt Lake City, Utah	59	30	3	2
Tucson, Ariz.	57	29	–	3
PACIFIC:	1,601	952	39	75
Berkeley, Calif.	21	16	1	–
Fresno, Calif.	47	33	1	1
Glendale, Calif.	40	29	–	1
Honolulu, Hawaii	54	29	1	4
Long Beach, Calif.	85	51	–	2
Los Angeles, Calif.	479	281	9	21
Oakland, Calif.	88	54	–	4
Pasadena, Calif.	35	26	1	1
Portland, Oreg.	155	89	8	6
Sacramento, Calif.	64	31	2	7
San Diego, Calif.	93	51	3	6
San Francisco, Calif.	184	109	4	5
San Jose, Calif.	43	28	6	2
Seattle, Wash.	127	72	1	12
Spokane, Wash.	42	28	–	–
Tacoma, Wash.	44	25	2	3
Total	11,971	6,712	422	627

Cumulative Totals
including reported corrections for previous weeks

All Causes, All Ages	447,631
All Causes, Age 65 and over	256,938
Pneumonia and Influenza, All Ages	21,524
All Causes, Under I Year of Age	20,831

ANTHRAX – *(Continued from page 294)*

Editorial Comment:

The evolution of the local lesion with the resolution of systemic symptoms and surrounding edema following antibiotic therapy is classical for cutaneous anthrax.

The recovery of *B. anthracis* from 7 of 12 environmental specimens indicates significant environmental contamination at this plant and may represent inadequate housekeeping. The recovery of *B. anthracis* from 4 of 13 gross samples indicates a constant risk to employees, handling these materials.

INTERNATIONAL NOTES
VENEZUELAN EQUINE ENCEPHALITIS
Guatemala and El Salvador

An estimated 3,000 to 6,000 horses in Guatemala and over 600 in El Salvador have died in an epizootic of Venezuelan Equine Encephalitis that began in June 1969 apparently in the Pacific coastal area and spread along the border between the two countries (Figure 2). Horses are being vaccinated in both countries to form a barrier around this affected area; 230,000 doses of vaccine for use in horses were supplied by the U.S. Army Medical Research and Development Command (USAMRDC).

Figure 2
VENEZUELAN EQUINE ENCEPHALITIS
GUATEMALA AND EL SALVADOR
JUNE – AUGUST 1969

Surveillance of human cases is being conducted in both countries, but to date the extent of human involvement is unknown. Twelve cases of encephalitis with nine deaths were reported in persons from El Salvador. Ecological and human studies are continuing.

(Reported by Dr. Cesar Mendizabal, Director of Epidemiology, Guatemala Ministry of Health; Dr. Eduardo Navarro, Director of Epidemiology, El Salvador Ministry of Health; Dr. James King, Public Health Advisor, USAID/Guatemala; Vernon Scott, Public Health Advisor, USAID/El Salvador; and teams from USAMRDC and a team from NCDC.)

THE MORBIDITY AND MORTALITY WEEKLY REPORT, WITH A CIRCULATION OF 18,500 IS PUBLISHED AT THE NATIONAL COMMUNICABLE DISEASE CENTER, ATLANTA, GEORGIA.

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MORBIDITY AND MORTALITY WEEKLY REPORT
ATLANTA, GEORGIA 30333

NOTE: THE DATA IN THIS REPORT ARE PROVISIONAL AND ARE BASED ON WEEKLY TELEGRAMS TO THE NCDC BY THE INDIVIDUAL STATE HEALTH DEPARTMENTS. THE REPORTING WEEK CONCLUDES AT CLOSE OF BUSINESS ON FRIDAY; COMPILED DATA ON A NATIONAL BASIS ARE OFFICIALLY RELEASED TO THE PUBLIC ON THE SUCCEEDING FRIDAY.