

Morbidity and Mortality



Vol. 20, No. 11

WEEKLY
REPORT

For
Week Ending
March 20, 1971

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

DATE OF RELEASE: MARCH 26, 1971 — ATLANTA, GEORGIA 30333

EPIDEMIOLOGIC NOTES AND REPORTS FOLLOW-UP ON SEPTICEMIAS ASSOCIATED WITH CONTAMINATED ABBOTT INTRAVENOUS FLUIDS United States

On Mar. 22, 1971, on the basis of evidence presented by the Center for Disease Control, the Food and Drug Administration (FDA) issued an order for the recall of Abbott intravenous fluids and recommended that, "all hospitals and other health care facilities begin an orderly and expeditious shift to infusion products other than Abbott (1)." A survey of other intravenous fluid manufacturers has indicated that recent increments in stocks and manufacturing capabilities of these companies are sufficient to compensate for the recall of the Abbott products.

Since March 13, when the FDA and CDC published a specific set of precautions to be observed when using Abbott infusion products (Special Supplement to MMWR, Vol. 20, No. 9), additional evidence has indicated the necessity for the

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recall. As of March 22, additional U.S. hospitals have been discovered that have experienced intravenous (IV) fluid associated septicemias with *Enterobacter cloacae* or *Erwinia*. All of these hospitals use Abbott IV products. A total of 350 IV-associated septicemias have been detected among these hospitals. The *E. cloacae* was isolated 225 times, and *Erwinia* was isolated 125 times. Ten of these hospitals have microbiologically examined in-use IV apparatus, and all 10 have discovered *E. cloacae* or *Erwinia* in such fluids.

(Continued on page 92)

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

DISEASE	11th WEEK ENDED		MEDIAN 1966 - 1970	CUMULATIVE, FIRST 11 WEEKS		
	March 20, 1971	March 21, 1970		1971	1970	MEDIAN 1966 - 1970
Aseptic meningitis	53	29	34	598	313	313
Brucellosis	4	6	2	20	29	29
Diphtheria	5	1	1	46	84	29
Encephalitis, primary:						
Arthropod-borne & unspecified	20	21	21	240	211	219
Encephalitis, post-infectious	7	10	10	63	79	93
Hepatitis, serum	177	138	80	1,789	1,358	744
Hepatitis, infectious	1,150	1,029	848	13,439	11,912	9,024
Malaria	57	102	47	827	764	491
Measles (rubeola)	2,438	1,630	1,630	20,373	12,002	12,002
Meningococcal infections, total	83	91	90	732	769	882
Civilian	67	74	73	624	707	803
Military	16	17	7	108	62	62
Mumps	3,816	2,907	---	37,759	28,363	---
Poliomyelitis, total	—	—	1	3	1	3
Paralytic	—	—	1	2	1	3
Rubella (German measles)	1,466	2,011	1,910	11,857	15,068	10,602
Tetanus	2	1	1	13	15	21
Tularemia	1	3	2	20	14	23
Typhoid fever	9	6	4	58	49	49
Typhus, tick-borne (Rky. Mt. spotted fever)	1	—	—	—	—	—
Rabies in animals	96	73	84	236	688	296

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	—	Psittacosis: Calif.-1, N.J.-1	8
Botulism:	—	Rabies in Man:	—
Leprosy: Hawaii-1, Ore.-1	30	Rubella congenital syndrome: Calif.-1	8
Leptospirosis:	8	Trichinosis: Ohio-1, Tenn.-1	22
Plague:	—	Typhus, murine:	1

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SEPTICEMIAS — (Continued from front page)

Laboratory investigations have repeatedly isolated the epidemic organisms from the inner cap assemblies of previously unopened Abbott IV bottles; transfer of organisms from contaminated cap liners to fluid has been effected after various cap manipulations. In addition to other mechanisms, transfer of organisms from cap liners to fluid has now been shown to occur under conditions simulating the normal hospital practice of placing additives in the fluid: removing the cap, replacing it, shaking the bottle several times, and standing it upright at room temperature. Organisms have also been isolated from the fluid in eight of 874 bottles after the careful removal of the cap.

The necessity for a recall of the products is also supported by data collected from a telephone survey of 81 randomly selected, non-governmental, acute-care hospitals in the United States with 50 to 400 beds. This survey was conducted on Mar. 22, 1971. Of the 35 hospitals using Abbott IV fluids, 8.6 percent were not aware of an infection problem associated with the use of Abbott solutions, and approximately 25-50 percent of the 35 hospitals were not following one or more of the specific precautions as outlined in Special Supplement (MMWR).

Further investigations are underway to discover which, if any, of the existing types and lots of Abbott fluid might be safe to use and to see if different techniques of production might result in caps free of contamination. It is uncertain when conclusive data on these matters will become available.

Hospitals unable to obtain immediately non-Abbott solutions are advised to follow closely these instructions:

- A. A bottle cap should not be struck or otherwise traumatized to effect removal.
- B. If the cap is not easily removed, the bottle should be discarded.

C. The cap should never be replaced after a bottle is partially or completely opened.

D. Containers should be opened only at the point of use.

E. The contents of the containers should be used immediately after opening.

F. When continuous infusions are needed, change IV apparatus at least every 24 hours, including the tubing.

G. At the first suspicion of clinical septicemia or fever which might be associated with contaminated intravenous fluid, all existing IV apparatus should be removed and microbiologically sampled. If continued IV therapy is necessary, it should be initiated with entirely new equipment and solutions.

H. Report complete (eight digit) lot numbers of all clinically or microbiologically suspect solutions to local or State health departments. Lot numbers are printed on the back of the labels.

Hospitals are urged to review their records of positive blood cultures since Jan. 1, 1970, looking for any isolate of *Erwinia* or for an increasing rate of isolation of *E. cloacae* from patients on intravenous therapy. If either are detected, the data should be transmitted to a local or State health department, regardless of the brand of intravenous therapy used in the hospital.

(Reported by the Bacterial Diseases Branch, Epidemiology Program, CDC.)

Editorial Note:

Without doubt, many additional hospitals using Abbott fluids have experienced similar, but unrecognized, problems due to this source of infection. It now seems clear that the problem was initially recognized by only a small group of hospitals because of their exceptional alertness and initiative in detecting and pursuing nosocomial infection problems.

Reference:

1. HEW News (press release) 71-13, March 22, 1971

METHEMOGLOBINEMIA — Washington, D.C.

On Mar. 13, 1971, a 42-year-old man from District Heights, Maryland, was entertained at the restaurant of a friend in southeast Washington, D.C. The man, his wife, and the restaurant proprietor were served a meal which consisted of broiled halibut with a cream-and-cheese sauce and garlic bread with butter. Soon after dinner, the patient was noted to be tachypneic and somnolent, and he collapsed shortly thereafter. At the same time, his wife experienced severe nausea and vomiting. They were taken to a local hospital where, in spite of intensive therapy, the man died soon after arrival. His wife was noted to be cyanotic, and her blood specimens were described as chocolate-brown in color. A diagnosis of methemoglobinemia was made, and she was treated with methylene blue. She recovered and was discharged on March 15.

An investigation by local health authorities and the Food and Drug Administration (FDA) showed that the patient and his wife had eaten the fish with sauce and the garlic

bread, while the proprietor had eaten only the fish. The bread had been prepared with butter and garlic, as well as with large quantities of a meat tenderizer which was added for flavoring. Samples of the bread were chemically positive for nitrites. Samples of the meat tenderizer were tested both at the District Laboratories of the Columbia Bureau of Health and the District Office of the FDA. The tenderizer was found to contain crystals of pure nitrite. Further investigation revealed that this product had been recalled in November 1970 because of mislabeling; however, several containers of the product have remained unaccounted for.

(Reported by R. A. McConnaughey, M.D., attending physician, Cafritz Memorial Hospital, Washington, D.C.; the Bureau of Food and Drugs, the Bureau of Disease Control, and the Bureau of Laboratories, Health Services Administration, Department of Human Resources, District of Columbia; the Medical Examiners Office, District of Columbia; and the Baltimore District Office, Food and Drug Administration.)

HUMAN LEPTOSPIROSIS — Texas

On Jan. 16, 1971, a 31-year-old man from Frio County, Texas, experienced myalgia, headache, and fever. Two days later, his headache became worse, and severe bilateral conjunctivitis developed. On January 21, he was admitted to a hospital in Dilley, Texas, with nuchal rigidity, positive Kernig's sign, and a temperature of 101°F. On admission, his white blood cell count was 9,600, and a cerebrospinal fluid examination revealed 220 polymorphonuclear cells and 20 lymphocytes, with normal sugar and protein. There was no evidence of hepatic or renal abnormality. A serum specimen obtained on admission showed microscopic agglutination titers of 1:800 for *Leptospiral* serotypes *autumnalis* and *pomona*. Agglutination titers for typhoid, paratyphoid, *Brucella abortus*, and *Proteus* OX-19 strain were negative.

The patient received a 7-day course of penicillin. His condition improved, and he was discharged 6 days after admission. A serum specimen obtained 12 days after the onset of illness showed titers of 1:12,800 for *pomona* and 1:3,200 for *autumnalis*.

The patient raises hogs and has approximately 24 sows in his breeding herd. The farrowing house has a gravity drainage system for urine and wash water, and this system clogged

frequently. When the man cleaned the clogged drains, he often got his hands and feet wet in the drainage water. In the past 12 months, he lost almost half of his pig crop because of abortions and neonatal deaths. Based on these clinical signs, the hogs were treated with 500 gm of chlorotetracycline per ton of feed for 14 days and were vaccinated with a *pomona* bacterin. The breeding herd was moved to a new facility which had an adequate drainage system.

(Reported by Johnny M. Barton, M.D., Wilson V. Garrett, M.D., private physicians, Dilley, Texas; Frank S. Moffett, D.V.M., veterinarian, Dilley, Texas; E. N. Wilson, M.D., County Health Officer, Frio County, Texas; S. J. Lerro, M.D., Epidemiologist, A. B. Rich, D.V.M., Public Health Veterinarian, M. S. Dickerson, M.D., Chief, Communicable Disease Services, Texas State Department of Health; and an EIS Officer.)

Editorial Note:

Texas reported five cases of human leptospirosis in 1970, eight in 1969, seven in 1968, three in 1967, and eleven in 1966. None of these patients were from Frio County. Of the 35 cases reported since 1966, two were associated with swine.

CONTROL OF TURTLE-ASSOCIATED SALMONELLOSIS — Washington

From 1965 to 1967 in Seattle-King County, Washington, 72 of the 619 (11.6 percent) human salmonellosis cases and 35 of the 362 (9.7 percent) salmonellosis outbreaks were associated with turtles (Table 1). In an effort to control this source of infection, the Washington State Board of Health put into effect a regulation on Jan. 1, 1968, requiring that turtles* be certified salmonella-free by the chief public health official in the State of origin. This regulation resulted in decreases in the importation of turtles into Washington. A marked decline in the number of turtle-associated salmonellosis cases ensued, such that in the Seattle area from 1968 to 1970, one of the 382 cases (0.3 percent) and one of the 245 outbreaks (0.4 percent) were associated with turtles. The methods of surveillance of salmonellosis in Seattle-King County were constant from 1965 to 1970, and the policy of careful investigation of each case indicates that the regulation has essentially eliminated turtle-associated cases of human salmonellosis in the Seattle area.

*offered for sale

(Reported by Herb W. Anderson, B.S., R.S., Environmental Epidemiologist, Donald R. Peterson, M.D., Director of Epidemiology, Seattle-King County Department of Public Health; Jack Allard, Ph.D., Supervisor, Chemical and Physical Hazards Section, Division of Health, and Byron J. Francis, M.D., Chief, Office of Epidemiology, Washington State Department of Social and Health Services.)

Editorial Note:

Turtle-associated salmonellosis cases obviously represent a significant number of the estimated 2 million cases occurring annually in the United States (1) (MMWR, Vol. 20, No. 6). It is important to note that the enforcement of the regulation in Washington has been accomplished without any increase in staff.

Reference:

1. Aserkoff BR, Schroeder SA, Brachman PS: Salmonellosis in the United States — a 5-year review. *Amer J Epidemiol* 92:13, 1970

Table 1
Salmonellosis and Its Association with Turtles
Seattle-King County, Washington — 1965-1970

Year	Number of		Number With Turtle in the Home		Number With Same Serotype Found in Both Patient and Turtle or Turtle Water	
	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks
1965	311	171	41	19	13	8
1966	136	83	10	6	8	4
1967	172	108	21	10	3	3
1968	100	72	1	1	0	0
1969	168	91	0	0	0	0
1970	114	82	0	0	0	0

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

March 20, 1971 and March 21, 1970 (11th Week)

AREA	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	DIPH- THERIA	ENCEPHALITIS			HEPATITIS			MALARIA	
				Primary including unsp. cases		Post In- fectious	Serum	Infectious			
				1971	1971	1971	1971	1970	1971	1971	1971
UNITED STATES.....	53	4	5	20	21	7	177	1,150	1,029	57	827
NEW ENGLAND.....	3	-	-	1	2	-	7	73	125	2	26
Maine.....	-	-	-	-	-	-	-	15	20	1	2
New Hampshire.....	-	-	-	-	-	-	-	5	7	-	1
Vermont.....	-	-	-	-	-	-	-	9	2	-	1
Massachusetts.....	1	-	-	-	2	-	1	22	63	-	15
Rhode Island.....	2	-	-	1	-	-	-	9	22	-	4
Connecticut.....	-	-	-	-	-	-	6	13	11	1	3
MIDDLE ATLANTIC.....	5	-	-	-	-	3	76	278	138	6	86
New York City.....	-	-	-	-	-	-	39	39	24	3	8
New York, Up-State...	1	-	-	-	-	2	11	105	65	3	18
New Jersey.....	3	-	-	-	-	-	14	77	14	-	40
Pennsylvania.....	1	-	-	-	-	1	12	57	35	-	20
EAST NORTH CENTRAL.....	4	-	1	9	10	-	20	160	175	6	37
Ohio.....	-	-	-	-	8	-	5	24	37	1	8
Indiana.....	2	-	-	-	-	-	-	16	20	1	2
Illinois.....	-	-	-	7	1	-	-	40	36	2	9
Michigan.....	2	-	-	2	1	-	15	74	77	2	11
Wisconsin.....	-	-	1	-	-	-	-	6	5	-	7
WEST NORTH CENTRAL.....	-	-	-	1	-	-	-	34	42	3	65
Minnesota.....	-	-	-	-	-	-	-	6	4	-	5
Iowa.....	-	-	-	-	-	-	-	5	5	-	7
Missouri.....	-	-	-	-	-	-	-	9	25	-	13
North Dakota.....	-	-	-	-	-	-	-	-	1	-	-
South Dakota.....	-	-	-	-	-	-	-	1	-	-	-
Nebraska.....	-	-	-	-	-	-	-	3	1	-	5
Kansas.....	-	-	-	1	-	-	-	10	6	3	35
SOUTH ATLANTIC.....	7	2	2	3	2	1	31	161	121	16	129
Delaware.....	-	-	-	-	-	-	-	6	2	-	-
Maryland.....	1	-	-	1	1	-	12	22	17	2	25
Dist. of Columbia...	-	-	-	-	-	-	-	2	2	-	-
Virginia.....	-	1	-	-	-	-	1	12	20	4	17
West Virginia.....	-	-	-	-	-	-	-	8	9	-	5
North Carolina...*	-	-	1	2	-	-	5	31	25	10	41
South Carolina...*	-	-	-	-	-	-	-	3	4	-	7
Georgia.....	-	1	-	-	-	-	-	26	6	-	19
Florida.....	6	-	1	-	1	1	13	51	36	-	15
EAST SOUTH CENTRAL.....	13	1	-	-	-	1	1	69	70	-	91
Kentucky.....	2	-	-	-	-	-	-	29	29	-	79
Tennessee.....	3	-	-	-	-	1	-	27	28	-	-
Alabama.....	7	1	-	-	-	-	1	7	2	-	12
Mississippi.....	1	-	-	-	-	-	-	6	11	-	-
WEST SOUTH CENTRAL.....	1	1	2	2	1	-	2	73	63	12	175
Arkansas.....	-	1	-	2	-	-	1	2	2	1	5
Louisiana.....	-	-	-	-	1	-	-	4	10	1	13
Oklahoma...*	1	-	-	-	-	-	-	19	10	4	33
Texas.....	-	-	2	-	-	-	1	48	41	6	124
MOUNTAIN.....	-	-	-	-	-	1	13	74	43	1	48
Montana.....	-	-	-	-	-	-	-	1	2	-	1
Idaho.....	-	-	-	-	-	-	-	3	3	-	-
Wyoming.....	-	-	-	-	-	-	-	-	1	-	1
Colorado.....	-	-	-	-	-	-	2	24	14	-	31
New Mexico.....	-	-	-	-	-	1	-	12	4	-	5
Arizona...*	-	-	-	-	-	-	1	19	14	-	7
Utah.....	-	-	-	-	-	-	10	15	5	1	3
Nevada.....	-	-	-	-	-	-	-	-	-	-	-
PACIFIC.....	20	-	-	4	6	1	27	228	252	11	170
Washington.....	-	-	-	-	2	-	-	41	30	-	1
Oregon.....	-	-	-	-	-	-	-	23	21	-	6
California.....	20	-	-	4	4	1	26	158	195	11	141
Alaska...*	-	-	-	-	-	-	-	1	2	-	1
Hawaii.....	-	-	-	-	-	-	1	5	4	-	21
Puerto Rico...*	-	-	-	-	-	-	-	22	30	-	2
Virgin Islands.....	-	-	-	-	-	-	-	-	-	-	-

*Delayed reports: Aseptic meningitis: Ariz. 1
Hepatitis, infectious: N.H. 1, N.C. delete 1, S.C. delete 1,
Okla. 3 (1970) 1 (1971), Alaska 3, P.R. 9 (1970) 14 (1971)

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

March 20, 1971 and March 21, 1970 (11th Week) - Continued

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		POLIOMYELITIS		
	1971	Cumulative		1971	Cumulative		1971	Cum. 1971	Total 1971	Paralytic	
		1971	1970		1971	1970				1971	Cum. 1971
UNITED STATES.....	2,438	20,373	12,002	83	732	769	3,816	37,759	-	-	2
NEW ENGLAND.....	91	640	166	1	32	35	178	2,442	-	-	-
Maine.....	43	341	2	-	5	-	33	437	-	-	-
New Hampshire.....	2	22	13	1	3	3	1	255	-	-	-
Vermont.....	24	28	1	-	-	3	-	-	-	-	-
Massachusetts.....	16	166	106	-	13	12	73	646	-	-	-
Rhode Island.....	-	22	14	-	2	3	25	563	-	-	-
Connecticut.....	6	61	30	-	9	14	46	541	-	-	-
MIDDLE ATLANTIC.....	263	2,249	1,844	8	97	126	208	2,747	-	-	-
New York City.....	138	1,353	256	-	14	32	66	444	-	-	-
New York, Up-State....	12	193	69	3	29	24	NN	NN	-	-	-
New Jersey.....	70	178	832	-	26	42	65	792	-	-	-
Pennsylvania.....	43	525	687	5	28	28	77	1,511	-	-	-
EAST NORTH CENTRAL.....	569	3,958	2,764	4	80	96	1,620	15,035	-	-	-
Ohio.....	152	1,531	825	-	21	47	239	2,639	-	-	-
Indiana.....	179	407	118	-	4	10	286	2,072	-	-	-
Illinois.....	77	1,010	1,387	1	31	19	251	1,549	-	-	-
Michigan.....	40	252	240	3	21	17	324	3,755	-	-	-
Wisconsin.....	121	758	194	-	3	3	520	5,020	-	-	-
WEST NORTH CENTRAL.....	197	1,590	1,218	4	67	32	230	2,111	-	-	-
Minnesota.....	2	33	12	1	9	4	51	381	-	-	-
Iowa.....	62	400	40	1	6	3	140	1,237	-	-	-
Missouri.....	87	535	207	1	26	23	10	114	-	-	-
North Dakota.....	2	84	64	1	2	1	14	149	-	-	-
South Dakota.....	18	89	41	-	3	-	12	116	-	-	-
Nebraska.....	2	10	815	-	7	1	3	23	-	-	-
Kansas.....	24	439	39	-	14	-	-	91	-	-	-
SOUTH ATLANTIC.....	255	2,239	1,736	19	106	174	343	2,875	-	-	-
Delaware.....	2	11	119	-	-	2	4	56	-	-	-
Maryland.....	-	22	254	1	11	13	10	281	-	-	-
Dist. of Columbia....	-	3	260	4	7	1	5	47	-	-	-
Virginia.....	23	682	438	1	11	15	27	373	-	-	-
West Virginia.....	16	128	76	-	2	4	154	861	-	-	-
North Carolina.....	102	738	187	4	17	33	NN	NN	-	-	-
South Carolina.....	21	253	115	1	10	7	31	356	-	-	-
Georgia.....	8	45	2	-	10	24	-	1	-	-	-
Florida.....	83	357	285	8	38	75	112	900	-	-	-
EAST SOUTH CENTRAL.....	243	2,961	153	15	58	48	332	3,198	-	-	-
Kentucky.....	198	1,337	95	9	17	16	154	1,195	-	-	-
Tennessee.....	21	247	29	2	21	22	151	1,525	-	-	-
Alabama.....	16	599	15	-	11	6	26	432	-	-	-
Mississippi.....	8	778	14	4	9	4	1	46	-	-	-
WEST SOUTH CENTRAL.....	582	4,976	2,989	7	61	129	283	2,629	-	-	1
Arkansas.....	25	71	16	-	2	14	3	19	-	-	-
Louisiana.....	1	565	34	1	20	30	-	14	-	-	-
Oklahoma.....	36	470	93	1	6	8	16	78	-	-	-
Texas.....	520	3,870	2,846	5	33	77	264	2,518	-	-	1
MOUNTAIN.....	77	822	509	3	24	9	162	1,559	-	-	-
Montana.....	25	268	10	1	1	-	20	211	-	-	-
Idaho.....	4	85	5	-	2	1	-	91	-	-	-
Wyoming.....	-	10	-	-	-	1	3	72	-	-	-
Colorado.....	18	157	13	-	4	3	71	406	-	-	-
New Mexico.....	14	144	69	-	2	-	26	225	-	-	-
Arizona.....	13	131	404	-	7	2	24	477	-	-	-
Utah.....	3	27	4	2	7	2	18	77	-	-	-
Nevada.....	-	-	4	-	1	-	-	-	-	-	-
PACIFIC.....	161	938	623	22	207	120	460	5,163	-	-	1
Washington.....	61	256	40	2	9	15	207	2,585	-	-	-
Oregon.....	9	77	102	-	12	8	29	488	-	-	1
California.....	88	580	442	20	184	96	173	1,772	-	-	-
Alaska.....	-	8	1	-	-	-	6	41	-	-	-
Hawaii.....	3	17	38	-	2	1	45	277	-	-	-
Puerto Rico.....	12	59	540	-	-	2	29	249	-	-	-
Virgin Islands.....	-	2	4	-	-	1	-	-	-	-	-

*Delayed reports: Measles: Me. 2, Mass. delete 12, N.J. 2, Okla. 2 (1970),
Mont. 91, Alaska 1

Meningococcal infections: N.H. 1, N.J. 1

Mumps: S.C. 8, Alaska 6

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

March 20, 1971 and March 21, 1970 (11th Week) - Continued

AREA	RUBELLA		TETANUS		TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971
UNITED STATES.....	1,466	11,857	2	13	1	20	9	58	1	4	96	836
NEW ENGLAND.....	50	423	-	-	-	-	1	2	-	-	14	56
Maine.....	11	95	-	-	-	-	-	-	-	-	14	51
New Hampshire.....	-	4	-	-	-	-	-	-	-	-	-	-
Vermont.....	4	13	-	-	-	-	-	-	-	-	-	5
Massachusetts.....	25	219	-	-	-	-	1	2	-	-	-	-
Rhode Island.....	1	23	-	-	-	-	-	-	-	-	-	-
Connecticut.....	9	69	-	-	-	-	-	-	-	-	-	-
MIDDLE ATLANTIC.....	165	746	-	4	-	-	1	6	1	1	4	50
New York City.....	22	106	-	4	-	-	-	3	-	-	-	-
New York, Up-State..	75	183	-	-	-	-	1	2	-	-	4	49
New Jersey.....	17	113	-	-	-	-	-	-	-	-	-	-
Pennsylvania.....	51	344	-	-	-	-	-	1	1	1	-	1
EAST NORTH CENTRAL....	272	2,293	-	-	-	1	1	4	-	-	4	52
Ohio.....	29	336	-	-	-	1	1	3	-	-	1	9
Indiana.....	42	498	-	-	-	-	-	-	-	-	-	2
Illinois.....	29	307	-	-	-	-	-	-	-	-	2	15
Michigan.....	123	736	-	-	-	-	-	1	-	-	1	11
Wisconsin.....	49	416	-	-	-	-	-	-	-	-	-	15
WEST NORTH CENTRAL....	92	677	-	-	1	2	-	-	-	-	22	199
Minnesota.....	2	51	-	-	-	-	-	-	-	-	8	44
Iowa.....	15	205	-	-	-	-	-	-	-	-	4	67
Missouri.....	8	233	-	-	1	2	-	-	-	-	5	38
North Dakota.....	1	26	-	-	-	-	-	-	-	-	2	34
South Dakota.....	1	19	-	-	-	-	-	-	-	-	-	-
Nebraska.....	5	23	-	-	-	-	-	-	-	-	-	-
Kansas.....	60	120	-	-	-	-	-	-	-	-	3	16
SOUTH ATLANTIC.....	149	921	-	4	-	12	1	14	-	1	12	101
Delaware.....	1	8	-	-	-	-	-	1	-	-	-	-
Maryland.....	9	46	-	-	-	3	-	3	-	-	-	-
Dist. of Columbia...	-	1	-	-	-	-	-	-	-	-	-	-
Virginia.....	-	100	-	-	-	5	-	1	-	-	6	31
West Virginia.....	24	124	-	-	-	-	-	1	-	-	4	45
North Carolina.....	2	11	-	-	-	4	1	2	-	1	-	-
South Carolina.....	8	143	-	-	-	-	-	-	-	-	-	-
Georgia.....	-	-	-	-	-	-	-	1	-	-	1	13
Florida.....	105	488	-	4	-	-	-	5	-	-	1	12
EAST SOUTH CENTRAL....	138	1,031	1	3	-	4	1	6	-	1	7	103
Kentucky.....	69	455	-	-	-	2	-	2	-	-	4	58
Tennessee.....	57	473	-	1	-	2	1	2	-	-	3	26
Alabama.....	9	59	-	1	-	-	-	2	-	-	-	19
Mississippi.....	3	44	1	1	-	-	-	-	-	1	-	-
WEST SOUTH CENTRAL....	256	1,894	-	-	-	-	-	5	-	1	27	179
Arkansas.....	1	200	-	-	-	-	-	-	-	-	-	14
Louisiana.....	-	52	-	-	-	-	-	3	-	-	1	7
Oklahoma.....	3	30	-	-	-	-	-	-	-	1	16	98
Texas.....	252	1,612	-	-	-	-	-	2	-	-	10	60
MOUNTAIN.....	47	954	-	-	-	1	-	2	-	-	-	1
Montana.....	20	63	-	-	-	1	-	-	-	-	-	-
Idaho.....	2	20	-	-	-	-	-	-	-	-	-	-
Wyoming.....	1	551	-	-	-	-	-	-	-	-	-	-
Colorado.....	5	106	-	-	-	-	-	-	-	-	-	-
New Mexico.....	9	79	-	-	-	-	-	-	-	-	-	-
Arizona.....	9	114	-	-	-	-	-	2	-	-	-	1
Utah.....	1	21	-	-	-	-	-	-	-	-	-	-
Nevada.....	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC.....	297	2,918	1	2	-	-	4	19	-	-	6	95
Washington.....	82	570	-	-	-	-	-	-	-	-	-	-
Oregon.....	24	234	-	-	-	-	-	-	-	-	-	-
California.....	184	2,020	1	2	-	-	4	19	-	-	5	69
Alaska.....	1	25	-	-	-	-	-	-	-	-	1	26
Hawaii.....	6	69	-	-	-	-	-	-	-	-	-	-
Puerto Rico.....	-	1	1	1	-	-	-	1	-	-	4	15
Virgin Islands.....	-	-	-	-	-	-	-	-	-	-	-	-

*Delayed reports: Rubella: Alaska 1

Tetanus: Calif. 1

Rabies in animals: Alaska 2

Week No.

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDED March 20, 1971

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

Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes	Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes
	All Ages	65 years and over				All Ages	65 years and over		
NEW ENGLAND:	712	445	59	39	SOUTH ATLANTIC:	1,387	742	59	45
Boston, Mass.-----	199	111	22	14	Atlanta, Ga.-----	111	55	6	3
Bridgeport, Conn.-----	38	30	7	2	Baltimore, Md.-----	259	129	8	12
Cambridge, Mass.-----	34	23	4	1	Charlotte, N. C.-----	57	25	—	3
Fall River, Mass.-----	22	16	—	—	Jacksonville, Fla.-----	93	49	3	1
Hartford, Conn.-----	60	38	1	3	Miami, Fla.-----	146	76	1	2
Lowell, Mass.-----	29	19	—	2	Norfolk, Va.-----	53	28	2	1
Lynn, Mass.-----	18	16	—	—	Richmond, Va.-----	107	51	7	4
New Bedford, Mass.-----	29	18	—	2	Savannah, Ga.-----	43	21	4	—
New Haven, Conn.-----	54	28	3	7	St. Petersburg, Fla.-----	118	88	7	3
Providence, R. I.-----	53	29	5	3	Tampa, Fla.-----	62	43	4	1
Somerville, Mass.-----	21	17	5	—	Washington, D. C.-----	300	152	16	14
Springfield, Mass.-----	52	30	5	3	Wilmington, Del.-----	38	25	1	1
Waterbury, Conn.-----	42	29	1	—					
Worcester, Mass.-----	61	41	6	2	EAST SOUTH CENTRAL:	731	401	38	38
MIDDLE ATLANTIC:	3,521	2,182	181	102	Birmingham, Ala.-----	126	68	2	6
Albany, N. Y.-----	54	41	2	—	Chattanooga, Tenn.-----	37	21	3	2
Allentown, Pa.-----	48	31	5	1	Knoxville, Tenn.-----	32	20	2	1
Buffalo, N. Y.-----	165	105	6	7	Louisville, Ky.-----	126	79	15	6
Camden, N. J.-----	52	31	3	2	Memphis, Tenn.-----	185	91	4	14
Elizabeth, N. J.-----	43	22	—	2	Mobile, Ala.-----	67	33	3	4
Erie, Pa.-----	42	29	4	2	Montgomery, Ala.-----	34	17	4	—
Jersey City, N. J.-----	74	48	10	4	Nashville, Tenn.-----	124	72	5	5
Newark, N. J.-----	81	40	2	1					
New York City, N. Y.†	1,788	1,114	90	40	WEST SOUTH CENTRAL:	1,214	615	38	59
Paterson, N. J.-----	53	36	7	1	Austin, Tex.-----	42	24	4	3
Philadelphia, Pa.-----	498	301	13	21	Baton Rouge, La.-----	55	22	2	2
Pittsburgh, Pa.-----	201	110	9	8	Corpus Christi, Tex.-----	32	14	—	3
Reading, Pa.-----	65	41	6	—	Dallas, Tex.-----	173	84	3	10
Rochester, N. Y.-----	100	60	7	5	El Paso, Tex.-----	43	29	2	3
Schenectady, N. Y.-----	17	13	1	—	Fort Worth, Tex.-----	95	49	3	5
Scranton, Pa.-----	39	27	2	1	Houston, Tex.-----	205	112	4	2
Syracuse, N. Y.-----	79	60	—	3	Little Rock, Ark.-----	59	22	—	3
Trenton, N. J.-----	46	21	3	3	New Orleans, La.-----	155	68	3	12
Utica, N. Y.-----	29	22	4	—	Oklahoma City, Okla.-----	94	50	3	3
Yonkers, N. Y.-----	47	30	7	1	San Antonio, Tex.-----	132	63	6	8
EAST NORTH CENTRAL:	2,753	1,550	95	140	Shreveport, La.-----	72	44	5	4
Akron, Ohio-----	69	46	1	3	Tulsa, Okla.-----	57	34	3	1
Canton, Ohio-----	38	21	6	1					
Chicago, Ill.-----	737	393	20	48	MOUNTAIN:	501	287	26	18
Cincinnati, Ohio-----	154	91	6	5	Albuquerque, N. Mex.-----	56	24	9	5
Cleveland, Ohio-----	195	94	2	11	Colorado Springs, Colo.-----	31	17	3	2
Columbus, Ohio-----	135	85	4	11	Denver, Colo.-----	126	74	4	4
Dayton, Ohio-----	84	50	1	7	Ogden, Utah-----	12	9	3	1
Detroit, Mich.-----	388	220	12	14	Phoenix, Ariz.-----	129	71	—	3
Evansville, Ind.-----	47	29	—	1	Pueblo, Colo.-----	13	10	1	—
Flint, Mich.-----	64	28	2	6	Salt Lake City, Utah-----	63	36	1	2
Fort Wayne, Ind.-----	52	38	2	1	Tucson, Ariz.-----	71	46	5	1
Gary, Ind.-----	43	20	4	3					
Grand Rapids, Mich.-----	69	45	4	3	PACIFIC:	1,742	1,037	57	63
Indianapolis, Ind.-----	192	106	4	5	Berkeley, Calif.-----	25	15	—	—
Madison, Wis.-----	42	17	6	3	Fresno, Calif.-----	56	30	4	3
Milwaukee, Wis.-----	107	74	5	1	Glendale, Calif.-----	39	28	1	—
Peoria, Ill.-----	37	21	1	1	Honolulu, Hawaii-----	49	29	3	—
Rockford, Ill.-----	41	26	6	1	Long Beach, Calif.-----	107	52	4	4
South Bend, Ind.-----	50	24	1	5	Los Angeles, Calif.-----	534	311	11	13
Toledo, Ohio-----	128	71	8	9	Oakland, Calif.-----	86	57	3	5
Youngstown, Ohio-----	81	51	—	1	Pasadena, Calif.-----	24	19	2	—
WEST NORTH CENTRAL:	894	559	27	38	Portland, Oreg.-----	142	92	5	8
Des Moines, Iowa-----	56	27	2	4	Sacramento, Calif.-----	66	32	4	1
Duluth, Minn.-----	24	19	—	1	San Diego, Calif.-----	131	78	2	5
Kansas City, Kans.-----	31	14	3	3	San Francisco, Calif.-----	213	129	12	9
Kansas City, Mo.-----	125	67	1	4	San Jose, Calif.-----	54	34	2	2
Lincoln, Nebr.-----	25	16	2	1	Seattle, Wash.-----	135	85	3	7
Minneapolis, Minn.-----	101	65	3	7	Spokane, Wash.-----	48	26	—	2
Omaha, Nebr.-----	100	72	—	5	Tacoma, Wash.-----	33	20	1	4
St. Louis, Mo.-----	248	165	8	9					
St. Paul, Minn.-----	99	62	1	3	Total	13,455	7,818	580	542
Wichita, Kans.-----	85	52	7	1	Expected Number	13,354	7,820	541	533
					Cumulative Total (includes reported corrections for previous weeks)	154,098	90,327	6,536	6,884
Las Vegas, Nev.*	23	8	1	1					

*Mortality data are being collected from Las Vegas, Nev., for possible inclusion in this table, however, for statistical reasons, these data will be listed only and not included in the total, expected number, or cumulative total, until 5 years of data are collected.

†Delayed Report for week ended March 13, 1971.

INTERNATIONAL NOTES DIPHTHERIA – United Kingdom

Between Feb. 4 and 18, 1971, four cases of diphtheria were reported in Manchester, England. Three of these patients, a 6-year-old child and two siblings aged 9 and 10 years, were admitted to a local hospital with membranous tonsillitis; none of them were severely ill. The two younger children had never been immunized, and the 10-year-old child had received only a primary course. The fourth case was in a 5-year-old unimmunized child who was admitted to a hospital with myocarditis. Virulent strains of *Corynebacterium diphtheriae*, mitis type, were isolated from the two younger patients with faucial diphtheria and from the patient with myocarditis. These strains (*C. diphtheriae*, mitis type) fermented glucose and maltose, but not starch; they had the unusual property of fermenting sucrose.

Throat and nose swabs were obtained from over 2,000 school and family contacts of the patients. Twenty-six carriers of virulent strains of *C. diphtheriae*, mitis type, were detected and were admitted to hospitals for observation and treatment. All patients and carriers were from the same locality. Over 7,000 children living in the immediate vicinity or attending the local schools were immunized between February 18 and 21.

In 1970, 22 cases of diphtheria, with three deaths, were reported in the Registrar General's Weekly Returns for Eng-

land and Wales, compared with 17 cases, with no deaths, in 1969 and 1968. In Scotland, two cases were reported in 1970, compared with none in 1969 and seven in 1968. Laboratories reported the isolation of *C. diphtheriae* from 17 patients and 11 carriers. One case and six associated carriers were detected in south London in March (B.M.J. 9 May). All of the remaining cases and carriers were found in an outbreak in a hospital for mentally subnormal patients (B.M.J. 4 July). There were 15 cases in this hospital. Although most illnesses were mild, two patients died with laboratory-confirmed diphtheria. There were also two other deaths suspected to have been due to diphtheria. Three members of the staff were infected, one of whom had a mild illness. In December, several more cases and carriers were found in the same hospital, and one unimmunized patient died.

Two strains of *C. ulcerans* were isolated. One was from a 32-year-old woman with severe exudative sore throat. The other was from a girl aged 4 years with tonsillitis. One isolation of *C. ovis* was reported from a man aged 30 with proctitis.

(From notes based on reports to the Public Health Laboratory Service from Public Health and Hospital Laboratories in the United Kingdom and Republic of Ireland, published in the British Medical Journal March 6, 1971.)

The Morbidity and Mortality Weekly Report, circulation 22,800, is published by the Center for Disease Control, Atlanta, Ga.

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The data in this report are provisional, based on weekly telegraphs to CDC by 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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks for case investigations of current interest to health officials.

Address all correspondence to

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