

MNWR

MORBIDITY AND MORTALITY WEEKLY REPORT

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Current Trends

Follow-up on Infant Botulism — United States

Infant botulism, a disease apparently resulting from intraintestinal toxin production by *Clostridium botulinum* (1), was first recognized as a distinct clinical entity in late 1976 (2-4). Since then, cases have been identified with increasing frequency—1, retrospectively, in 1975, 15 in 1976, 42 in 1977—and have been reported to CDC from 15 states throughout the country: California (37),* Pennsylvania (4), Utah (4), Washington (2), and (1 each) Arizona, Colorado, Montana, Nevada, New Jersey, New York, North Dakota, Oregon, Tennessee, Texas, and Wisconsin (Figure 1). Cases have occurred most often in the fall months, particularly in the past year; however, increased physician awareness may have accounted for this observation (Figure 2).

All patients identified thus far have had sufficient neuromuscular paralysis to need hospitalization. Constipation was the first symptom of illness in most cases, but it was frequently initially overlooked. A spectrum in the severity of symptoms has been noted (7). Some infants showed only lethargy, mild weakness, and slowed feeding, while others became acutely ill with obvious feeding difficulty, severe generalized weakness, and hypotonia over a 1-3 day period which, in some cases, progressed to respiratory insufficiency. One California and 1 Utah infant died following respiratory arrest.

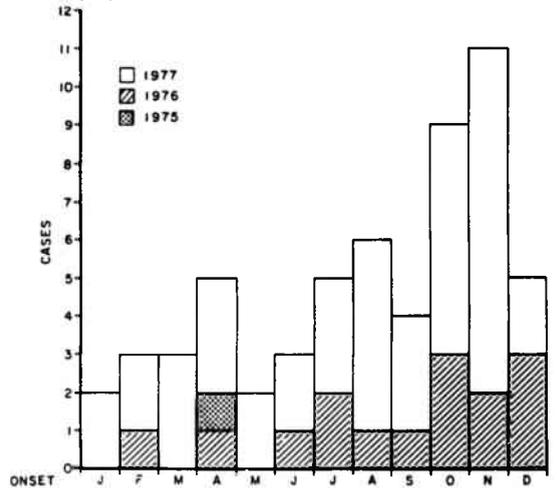
Polyvalent antitoxin was administered to the first patient (in 1975) because the case was thought to be foodborne botulism. However, subsequent patients that received

*Active intensive case-finding most likely accounts for the large number of California cases.

meticulous supportive care which focused on their nutritional and respiratory needs have been successfully managed.

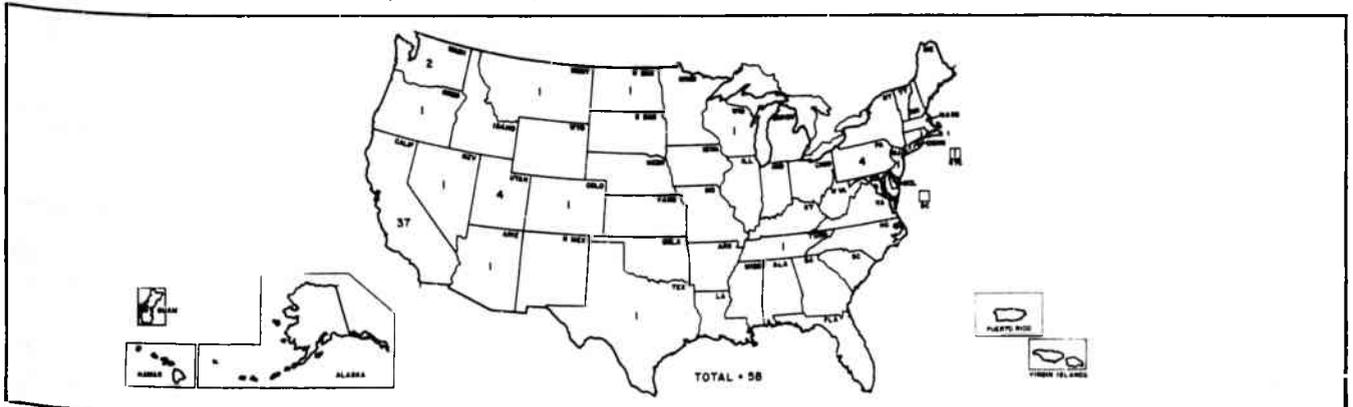
In general, affected infants were the product of a normal gestation and delivery. They had no congenital abnormalities and were healthy until onset of illness. Thirty-three (57%) of the 58 patients were males. The median age at onset was 10 weeks, the range 3-26 weeks.

FIGURE 2. Infant botulism cases reported to CDC, by month of onset, January 1, 1975-December 31, 1977



In all cases the diagnosis was established by the identification of *C. botulinum* toxin and/or organisms in the feces of patients. Botulinum toxin was identified in the feces

FIGURE 1. Cases of infant botulism reported to CDC, January 1, 1975-December 31, 1977



Botulism — continued

of 52 (90%) of the 58 cases, while in the other 6, only *C. botulinum* was found. By comparison, in an ongoing California study no botulin toxin has been found in the feces of over 100 healthy age-matched control infants. (*C. botulinum* was isolated on 1 occasion from the feces of a control infant, but not from his subsequent specimens.)

Of the 58 cases, 33 were type A and 25 were type B. All but 1 of 8 cases east of the Mississippi were type B, while type A cases predominated in the West. This distribution reflects the known geographic distribution of type A and type B spores in American soil (5).

No source of ingestible preformed botulin toxin has been identified for any infant, nor have the patients shared any exposure to a common food. Cases have occurred in exclusively breast-fed and exclusively formula-fed infants, although most infants have had some exposure to food items other than milk. A potential source of *C. botulinum* spores, however, has been identified for 6 cases. Vacuum cleaner dust from the home of an infant with type A illness was found to contain *C. botulinum* type A, while soil from the yard of an infant with type B illness yielded type B organisms. Three opened jars of honey taken from the homes of 3 infants with type B botulism who had been fed honey and water were found to contain type B organisms. Similarly, an unopened jar of honey of the same brand as that fed to an infant with type A illness was shown

to harbor type A organisms. In contrast, *C. botulinum* was not found in 17 other commercial honey specimens, in 1 specimen from a private beekeeper (1), or in over 100 other foods tested, including cereals, baby food, formula, and breast milk; however, testing of foods and other potential sources of spores has not been done for all cases.

Reported by SS Arnon, MD, J Chin, MD, State Epidemiologist, K Damus, RN, MSPH, TF Midura, PhD, S Snowden, B Thompson, MPH, RM Wood, PhD, California State Dept of Health; appropriate state health departments and State Epidemiologists; Enterobacteriology Br, Bacteriology Div, Bur of Laboratories, Field Services Div, Enteric Diseases Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: The identification of 57 of the 58 cases in only 24 months in 15 states located throughout the United States indicates that infant botulism occurs more commonly than previously realized. In California, Pennsylvania, and Utah, some hospitals and physicians diagnosed subsequent cases shortly after identifying their first case. If cases are evenly distributed in the country, then by a conservative estimate at least 250 cases needing hospitalization may be occurring annually. Furthermore, since botulin spores are found worldwide (4,5), there is no reason to suppose that cases are limited to the United States. Failure to identify cases in other countries may be explained by lack of physician awareness and limited laboratory facilities. Intensive case-finding is needed to provide sufficient data to elucidate

(Continued on page 23)

Table I. Summary—Cases of Specified Notifiable Diseases: United States

[Cumulative totals include revised and delayed reports through previous weeks]

DISEASE	2nd WEEK ENDING		MEDIAN 1973-1977	CUMULATIVE, FIRST 2 WEEKS		
	January 14, 1978	January 15, 1977†		January 14, 1978	January 15, 1977†	MEDIAN 1973-1977
Aseptic meningitis	41	42	42	69	93	73
Bruceellosis	-	3	1	3	7	3
Chickenpox	3,192	4,443	4,081	4,972	7,417	6,876
Diphtheria	-	-	1	-	-	3
Encephalitis	Primary	7	8	14	30	26
	Post-infectious	2	1	4	2	3
Hepatitis, Viral	Type B	264	256	445	536	350
	Type A	416	622	755	1,164	
	Type unspecified	157	183	261	307	
Malaria	6	3	3	10	6	6
Measles (rubeola)	225	824	380	385	1,821	631
Meningococcal infections, total	25	39	27	40	76	51
Civilian	25	39	26	40	76	49
Military	-	-	-	-	-	-
Mumps	320	476	1,140	526	845	2,266
Pertussis	70	20	---	84	28	---
Rubella (German measles)	98	229	158	168	340	290
Tetanus	-	-	-	-	1	1
Tuberculosis	381	472	---	641	682	---
Tularemia	1	2	2	2	3	4
Typhoid fever	7	10	2	11	11	8
Typhus, tick-borne (Rky. Mt. spotted fever)	-	1	1	2	4	4
Venereal Diseases:						
Gonorrhea	17,876	19,139	---	33,953	37,351	---
Civilian	439	640	---	652	1,128	---
Military	329	407	---	579	815	---
Syphilis, primary and secondary	5	2	---	10	9	---
Civilian	5	2	---	10	9	---
Military	-	-	---	-	-	---
Rabies in animals	42	41	41	79	84	82

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax	-	Poliomyelitis, total:	-
Botulism	-	Paralytic:	-
Congenital rubella syndrome:	-	Psittacosis:* Calif. 1	1
Leprosy:* Calif. 1	1	Rabies in man:	-
Leptospirosis:*	1	Trichinosis: N.J. 4	6
Plague:	-	Typhus, murine:	1

†Delayed reports received for calendar year 1977 are used to update last year's weekly and cumulative totals.

*Delayed reports (1977): Leprosy: La. +3, Tex. +1; Leptospirosis: Iowa +2, La. +1; Psittacosis: Colo. +1

Table III
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending January 14, 1978 and January 15, 1977 - 2nd Week

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1978	1977 [†]						
UNITED STATES	41	-	3,152	-	-	10	7	2	264	416	157	6	10
NEW ENGLAND	-	-	321	-	-	1	-	-	15	5	14	-	1
Maine	-	-	36	-	-	-	-	-	-	-	-	-	-
New Hampshire*	-	-	10	-	-	-	-	-	-	3	1	-	-
Vermont	-	-	5	-	-	-	-	-	1	-	-	-	-
Massachusetts	-	-	176	-	-	1	-	-	6	1	12	-	1
Rhode Island	-	-	22	-	-	-	-	-	4	-	-	-	-
Connecticut	-	-	72	-	-	-	-	-	4	1	1	-	-
MIDDLE ATLANTIC	9	-	160	-	-	1	1	-	32	48	24	3	4
Upstate New York	4	-	95	-	-	1	-	-	5	13	8	-	-
New York City	4	-	63	-	-	-	1	-	15	18	9	3	4
New Jersey*	-	-	NN	-	-	-	-	-	12	17	7	-	-
Pennsylvania*	1	-	2	-	-	-	-	-	-	-	-	-	-
EAST NORTH CENTRAL	1	-	1,245	-	-	2	4	-	54	39	17	-	-
Ohio*	-	-	56	-	-	2	2	-	12	12	-	-	-
Indiana*	-	-	219	-	-	-	-	-	-	-	-	-	-
Illinois	-	-	54	-	-	-	-	-	25	8	9	-	-
Michigan	1	-	428	-	-	-	2	-	17	19	8	-	-
Wisconsin	-	-	488	-	-	-	-	-	-	-	-	-	-
WEST NORTH CENTRAL	1	-	193	-	-	-	-	-	12	30	1	1	1
Minnesota	-	-	2	-	-	-	-	-	6	18	-	-	-
Iowa	-	-	126	-	-	-	-	-	-	-	-	-	-
Missouri	-	-	9	-	-	-	-	-	6	8	1	1	1
North Dakota	-	-	8	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	4	-	-	-	-	-	-	-	-	-	-
Nebraska*	1	-	19	-	-	-	-	-	-	1	-	-	-
Kansas	-	-	25	-	-	-	-	-	-	3	-	-	-
SOUTH ATLANTIC	9	-	401	-	-	-	2	2	31	24	17	-	1
Delaware	-	-	2	-	-	-	-	-	-	-	2	-	-
Maryland	-	-	31	-	-	-	-	1	11	8	3	-	1
District of Columbia	-	-	1	-	-	-	1	-	-	-	-	-	-
Virginia	4	-	89	-	-	-	-	-	11	7	7	-	-
West Virginia	3	-	221	-	-	-	-	-	-	1	-	-	-
North Carolina	-	-	NN	-	-	-	1	1	2	3	-	-	-
South Carolina	1	-	11	-	-	-	-	-	5	1	4	-	-
Georgia	-	-	-	-	-	-	-	-	1	-	-	-	-
Florida	1	-	46	-	-	-	-	-	1	4	1	-	-
EAST SOUTH CENTRAL	3	-	262	-	-	1	-	-	8	31	1	-	-
Kentucky*	-	-	253	-	-	-	-	-	2	16	-	-	-
Tennessee	3	-	NN	-	-	1	-	-	6	14	-	-	-
Alabama	-	-	4	-	-	-	-	-	-	1	1	-	-
Mississippi	-	-	5	-	-	-	-	-	-	-	-	-	-
WEST SOUTH CENTRAL	3	-	161	-	-	1	-	-	12	18	28	1	1
Arkansas	-	-	1	-	-	1	-	-	-	2	-	-	-
Louisiana	-	-	NN	-	-	-	-	-	-	-	-	-	-
Oklahoma	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Texas	3	-	160	-	-	-	-	-	12	16	28	1	1
MOUNTAIN	3	-	233	-	-	1	-	-	13	60	10	-	-
Montana	1	-	7	-	-	1	-	-	-	15	-	-	-
Idaho	-	-	83	-	-	-	-	-	2	9	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	-	-	-	-	-	-	-	1	-	-	-
New Mexico	2	-	89	-	-	-	-	-	7	22	5	-	-
Arizona	-	-	NN	-	-	-	-	-	4	13	5	-	-
Utah	-	-	54	-	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	12	-	216	-	-	3	-	-	87	161	45	1	2
Washington	-	-	156	-	-	-	-	-	3	22	3	-	-
Oregon	-	-	4	-	-	-	-	-	16	29	5	-	-
California*	12	-	-	-	-	3	-	-	66	106	37	1	2
Alaska	-	-	8	-	-	-	-	-	1	4	-	-	-
Hawaii	-	-	8	-	-	-	-	-	1	-	-	-	-
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico	-	-	-	-	-	-	1	-	-	5	1	-	-
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	-

[†] Delayed reports received for calendar year 1977 are not shown below but are used to update last year's weekly and cumulative totals.
 * Delayed reports (1978): Chickenpox: N. H. +5, Ind. +222, Ky. +10, Calif. +26, Hep. B: N. J. +13, Pa. +25, Ohio -1, Ind. +1, Neb. +1; Hep. A: N. J. +17, Pa. +21, Ind. +1, Neb. -1; Hep. unsp.: N. J. +10, Pa. +16, Ind. +1; Malaria: Pa. +3.

Table III-Continued
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending January 14, 1978 and January 15, 1977 - 2nd Week

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1978	CUMULATIVE		1978	CUMULATIVE		1978	CUM. 1978	1978	1978	CUM. 1978	CUM. 1978
		1978	1977†		1978	1977†						
UNITED STATES	225	385	1,821	25	40	76	320	526	70	98	168	-
NEW ENGLAND	1	4	23	1	2	2	23	54	1	4	7	-
Maine	1	4	-	-	-	-	17	39	-	1	1	-
New Hampshire	-	-	1	-	-	-	-	-	-	-	1	-
Vermont	-	-	21	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	-	1	1	-	3	5	-	2	4	-
Rhode Island	-	-	-	-	-	-	-	1	-	-	-	-
Connecticut	-	-	1	-	1	2	3	9	1	1	1	-
MIDDLE ATLANTIC	24	68	349	4	8	13	14	26	4	12	24	-
Upstate New York	6	44	17	2	4	2	3	6	3	1	2	-
New York City	14	19	4	2	3	3	6	11	1	1	2	-
New Jersey	1	1	7	-	1	6	1	2	-	5	5	-
Pennsylvania	3	4	321	-	-	2	4	7	-	5	15	-
EAST NORTH CENTRAL	127	154	569	2	3	11	86	116	7	36	50	-
Ohio	3	5	27	-	-	7	14	24	7	1	1	-
Indiana*	-	-	297	1	1	-	-	-	-	-	-	-
Illinois	-	-	32	-	-	1	13	24	-	-	-	-
Michigan	120	145	48	1	2	2	39	48	-	22	36	-
Wisconsin	4	4	165	-	-	1	23	20	-	13	13	-
WEST NORTH CENTRAL	1	3	550	1	3	5	28	123	2	1	9	-
Minnesota	-	-	7	-	-	-	3	3	1	-	-	-
Iowa	1	3	396	-	1	1	2	6	-	-	-	-
Missouri	-	-	27	1	1	4	20	47	1	1	1	-
North Dakota	-	-	2	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	-	-	7	-
Nebraska	-	-	-	-	-	-	2	2	-	-	-	-
Kansas	-	-	124	-	1	-	1	65	-	-	1	-
SOUTH ATLANTIC	33	46	15	11	11	14	40	45	8	13	24	-
Delaware	-	1	-	-	-	1	5	6	-	-	1	-
Maryland	-	-	-	-	-	1	5	5	-	-	-	-
District of Columbia	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	18	23	8	2	2	-	13	14	-	7	8	-
West Virginia	9	16	7	1	1	2	4	5	-	5	12	-
North Carolina	-	-	-	1	1	2	6	7	2	-	-	-
South Carolina	3	3	-	2	2	3	5	6	1	-	-	-
Georgia	-	-	-	3	3	-	-	-	4	-	-	-
Florida	3	3	-	2	2	5	2	2	1	1	3	-
EAST SOUTH CENTRAL	25	67	37	-	-	4	65	71	-	2	11	-
Kentucky	2	18	6	-	-	3	25	25	-	2	6	-
Tennessee	23	42	31	-	-	-	37	38	-	-	2	-
Alabama	-	-	-	-	-	1	3	8	-	-	-	-
Mississippi	-	7	-	-	-	-	-	-	-	-	3	-
WEST SOUTH CENTRAL	1	4	32	1	5	16	33	44	1	-	2	-
Arkansas	-	-	1	-	1	-	-	4	-	-	-	-
Louisiana	-	-	-	-	-	11	-	-	-	-	-	-
Oklahoma	NA	-	2	-	-	-	NA	-	NA	NA	-	-
Texas	1	4	29	1	4	5	33	40	1	-	2	-
MOUNTAIN	5	23	96	-	-	2	8	12	-	2	4	-
Montana	4	22	86	-	-	-	-	-	-	-	-	-
Idaho	-	-	7	-	-	1	1	1	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	1	1	-	-	-	-	2	3	-	-	-	-
New Mexico	-	-	2	-	-	-	1	1	-	-	-	-
Arizona	-	-	-	-	-	1	-	-	-	-	-	-
Utah	-	-	1	-	-	-	4	7	-	2	4	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	8	16	144	5	8	9	23	35	47	28	37	-
Washington	-	1	4	-	-	-	5	5	-	13	13	-
Oregon	1	1	5	-	-	-	3	6	38	1	1	-
California	7	14	135	5	8	4	13	22	9	16	25	-
Alaska	-	-	-	-	-	4	-	-	-	-	-	-
Hawaii	-	-	-	-	-	1	2	2	-	1	1	-
Guam	NA	-	-	-	-	-	NA	-	NA	NA	-	-
Puerto Rico	4	4	21	-	-	-	4	4	-	-	-	-
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-

†Delayed reports received for calendar year 1977 are not shown below but are used to update last year's weekly and cumulative totals.

*Delayed reports (1978): Rubella: Ind. +1.

Table III-Continued
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending January 14, 1978 and January 15, 1977 - 2nd Week

REPORTING AREA	TUBERCULOSIS		TULA-REMICIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
	1978	CUM. 1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	GONORRHEA		SYPHILIS (Pri. & Sec.)		CUM. 1978		
								CUMULATIVE		1978	CUMULATIVE			
								1978	1977†		1978		1977†	
UNITED STATES	381	641	2	7	11	-	2	17,676	33,953	37,351	329	579	815	79
NEW ENGLAND	15	21	-	-	-	-	-	528	924	637	14	22	26	-
Maine	2	2	-	-	-	-	-	19	47	78	-	-	-	-
New Hampshire	1	1	-	-	-	-	-	36	48	36	-	-	-	-
Vermont	2	4	-	-	-	-	-	14	18	18	-	-	1	-
Massachusetts	3	4	-	-	-	-	-	279	451	246	10	16	19	-
Rhode Island	4	4	-	-	-	-	-	25	44	44	1	1	-	-
Connecticut	3	6	-	-	-	-	-	155	316	385	3	5	6	-
MIDDLE ATLANTIC	65	117	-	1	4	-	2	1,482	3,527	5,586	42	83	105	-
Upstate New York	3	3	-	-	1	-	-	74	74	215	-	-	-	-
New York City	57	66	-	1	2	-	-	968	1,686	3,688	34	58	68	-
New Jersey	5	48	-	-	-	-	-	152	982	554	8	16	18	-
Pennsylvania	NA	-	-	-	1	-	2	288	765	1,129	-	9	19	-
EAST NORTH CENTRAL	20	58	-	1	1	-	-	2,116	3,614	5,094	10	14	108	1
Ohio*	7	37	-	1	1	-	-	650	1,138	1,616	2	3	28	-
Indiana	10	18	-	-	-	-	-	474	667	206	4	5	3	1
Illinois	NA	-	-	-	-	-	-	215	549	1,859	2	3	64	-
Michigan	NA	-	-	-	-	-	-	595	1,078	1,031	1	2	11	-
Wisconsin	3	3	-	-	-	-	-	182	182	382	1	1	2	-
WEST NORTH CENTRAL	11	15	-	-	-	-	-	1,079	1,722	2,225	12	16	21	32
Minnesota	2	5	-	-	-	-	-	115	289	311	-	3	7	13
Iowa	2	3	-	-	-	-	-	185	185	286	1	1	1	5
Missouri	3	3	-	-	-	-	-	436	803	1,140	5	6	8	7
North Dakota	-	-	-	-	-	-	-	18	35	24	-	-	1	7
South Dakota	-	-	-	-	-	-	-	29	59	52	1	1	-	-
Nebraska	-	-	-	-	-	-	-	99	154	125	-	-	1	-
Kansas	4	4	-	-	-	-	-	197	197	287	5	5	3	-
SOUTH ATLANTIC	109	146	1	1	1	-	-	4,990	9,026	8,369	86	186	252	8
Delaware	-	-	-	-	-	-	-	181	199	165	-	1	-	-
Maryland	23	43	1	-	-	-	-	755	1,369	976	2	13	14	-
District of Columbia	3	3	-	-	-	-	-	353	547	623	9	19	25	-
Virginia	-	-	-	1	1	-	-	485	835	1,015	6	12	19	-
West Virginia	5	10	-	-	-	-	-	82	150	95	-	-	-	-
North Carolina	28	35	-	-	-	-	-	612	1,094	1,270	7	11	40	-
South Carolina	16	21	-	-	-	-	-	463	664	767	6	11	17	2
Georgia	12	12	-	-	-	-	-	801	1,539	1,825	15	45	51	5
Florida*	22	22	-	-	-	-	-	1,258	2,629	1,633	41	74	86	1
EAST SOUTH CENTRAL	31	65	1	1	1	-	-	1,700	2,815	3,021	15	30	22	1
Kentucky	-	6	-	1	1	-	-	109	162	351	1	1	2	1
Tennessee	9	13	1	-	-	-	-	289	953	1,363	7	13	10	-
Alabama	14	24	-	-	-	-	-	553	672	734	3	8	5	-
Mississippi	8	26	-	-	-	-	-	749	828	573	4	8	5	-
WEST SOUTH CENTRAL	40	50	-	1	1	-	-	2,631	5,281	5,325	52	90	104	16
Arkansas	-	2	-	-	-	-	-	144	216	432	6	6	3	-
Louisiana	24	29	-	-	-	-	-	393	799	699	12	12	26	-
Oklahoma	NA	3	-	NA	-	NA	-	NA	213	381	NA	-	3	5
Texas*	16	16	-	1	1	-	-	2,094	4,053	3,813	34	72	72	11
MOUNTAIN	14	27	-	-	-	-	-	568	1,143	1,442	11	11	12	1
Montana*	3	9	-	-	-	-	-	21	89	111	-	-	-	-
Idaho*	-	-	-	-	-	-	-	26	55	80	-	-	1	-
Wyoming	-	-	-	-	-	-	-	20	30	58	3	3	2	-
Colorado	-	-	-	-	-	-	-	124	265	314	3	3	4	-
New Mexico	3	6	-	-	-	-	-	86	144	167	2	2	-	-
Arizona	8	12	-	-	-	-	-	169	314	428	1	1	4	1
Utah	-	-	-	-	-	-	-	40	56	73	1	1	-	-
Nevada	-	-	-	-	-	-	-	82	170	211	1	1	1	-
PACIFIC	76	138	-	2	3	-	-	2,782	5,901	5,482	87	127	165	20
Washington*	NA	-	-	-	-	-	-	117	117	503	NA	-	4	-
Oregon	2	3	-	-	-	-	-	225	352	297	-	1	6	-
California	60	98	-	2	3	-	-	2,268	5,182	4,415	87	123	152	20
Alaska	-	-	-	-	-	-	-	108	138	166	-	-	-	-
Hawaii	14	37	-	-	-	-	-	64	114	101	-	3	3	-
Guam	NA	-	-	NA	-	NA	-	NA	-	18	NA	-	-	-
Puerto Rico	5	8	-	-	-	-	-	30	77	106	3	9	22	-
Virgin Islands	-	-	-	-	-	-	-	5	9	8	1	1	-	-

†Delayed reports received for calendar year 1977 are not shown below but are used to update last year's weekly and cumulative totals.
 *Delayed reports (1978): TB: Ohio -1; GC: Fla. -1, Mont. -2 (civ.), +2 (mil.), Idaho -29, Wash. +158; Syphilis: Tex. +1; An. Rabies: Fla. +1.

Table IV
Deaths in 121 United States Cities*
Week Ending January 14, 1978 - 2nd Week

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza ALL AGES	REPORTING AREA	ALL CAUSES					Pneumonia and Influenza ALL AGES
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year			ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	
NEW ENGLAND	863	592	193	38	23	76	SOUTH ATLANTIC	1,213	748	312	70	51	91
Boston, Mass.	240	147	55	15	10	20	Atlanta, Ga.	161	87	49	15	5	6
Bridgeport, Conn.	75	49	22	2	1	10	Baltimore, Md.	183	112	53	8	5	9
Cambridge, Mass.	36	31	5	-	-	3	Charlotte, N. C.	76	47	18	6	3	4
Fall River, Mass.	45	33	10	-	2	2	Jacksonville, Fla.	98	61	25	6	5	10
Hartford, Conn.	77	52	16	5	2	6	Miami, Fla.	30	14	7	2	7	3
Lowell, Mass.	33	27	6	-	-	3	Norfolk, Va.	79	43	27	3	2	11
Lynn, Mass.	26	22	4	-	-	4	Richmond, Va.	121	64	35	4	15	11
New Bedford, Mass.	27	23	3	1	-	3	Savannah, Ga.	40	24	8	4	2	5
New Haven, Conn.	69	48	11	5	3	2	St. Petersburg, Fla.	143	126	11	2	1	16
Providence, R.I.	68	42	21	2	2	12	Tampa, Fla.	85	57	15	7	2	10
Somerville, Mass.	11	7	4	-	-	-	Washington, D. C.	137	75	49	7	1	4
Springfield, Mass.	52	38	11	3	-	3	Wilmington, Del.	63	38	15	6	3	2
Waterbury, Conn.	41	31	7	2	-	5	EAST SOUTH CENTRAL	795	459	220	52	26	51
Worcester, Mass.	63	42	15	3	3	3	Birmingham, Ala.	91	48	30	5	4	3
MIDDLE ATLANTIC	3,542	2,369	842	168	92	294	Chattanooga, Tenn.	84	52	21	2	4	4
Albany, N. Y.	60	42	10	1	6	4	Knoxville, Tenn.	43	26	16	1	-	3
Allentown, Pa.	33	25	8	-	-	3	Louisville, Ky.	147	89	43	6	1	19
Buffalo, N. Y.	123	84	30	8	1	15	Memphis, Tenn.	151	89	35	13	7	2
Camden, N. J.	45	28	13	1	1	3	Mobile, Ala.	112	59	35	7	4	9
Elizabeth, N. J.	40	30	9	1	-	2	Montgomery, Ala.	48	28	12	5	2	3
Erie, Pa.	61	43	13	3	1	5	Nashville, Tenn.	119	68	28	13	4	8
Jersey City, N. J.	65	49	6	3	5	2	WEST SOUTH CENTRAL	1,379	809	365	95	56	51
Newark, N. J.	25	13	7	2	-	2	Austin, Tex.	70	43	18	2	2	4
New York City, N. Y.	1,841	1,259	408	86	46	131	Baton Rouge, La.	46	25	16	2	1	5
Peterborough, N. J.	48	28	13	4	2	8	Corpus Christi, Tex.	36	24	9	1	1	-
Philadelphia, Pa.	389	237	109	23	15	46	Dallas, Tex.	201	127	47	18	7	5
Pittsburgh, Pa.	289	186	78	15	5	24	El Paso, Tex.	49	29	11	4	2	4
Reading, Pa.	48	38	8	2	-	10	Fort Worth, Tex.	78	59	15	2	1	5
Rochester, N. Y.	127	81	37	4	3	13	Houston, Tex.	344	167	101	36	17	7
Schenectady, N. Y.	28	21	5	1	1	2	Little Rock, Ark.	55	28	20	6	1	1
Scranton, Pa.	61	44	13	3	-	7	New Orleans, La.	182	107	50	9	11	4
Syracuse, N. Y.	113	61	41	6	2	2	San Antonio, Tex.	153	93	39	11	5	6
Trenton, N. J.	54	31	16	3	3	8	Shreveport, La.	88	57	20	2	6	7
Utica, N. Y.	48	34	11	2	-	7	Tulsa, Okla.	77	50	19	2	2	3
Yonkers, N. Y.	44	35	7	-	1	3	MOUNTAIN	661	399	155	55	26	43
EAST NORTH CENTRAL	2,941	1,829	758	162	110	131	Albuquerque, N. Mex.	73	44	17	4	2	15
Akron, Ohio	74	47	20	2	4	-	Colorado Springs, Colo.	27	17	4	3	1	6
Canton, Ohio	65	49	13	1	1	3	Denver, Colo.	177	104	39	16	11	9
Chicago, Ill.	739	437	194	61	28	29	Las Vegas, Nev.	52	25	13	11	1	4
Cincinnati, Ohio	204	130	51	5	12	11	Ogden, Utah	11	7	2	1	-	2
Cleveland, Ohio	169	98	50	12	3	8	Phoenix, Ariz.	145	86	33	15	7	1
Columbus, Ohio	137	82	36	10	7	8	Pueblo, Colo.	25	18	5	-	-	3
Dayton, Ohio	112	73	28	7	3	3	Salt Lake City, Utah	54	31	16	2	4	3
Detroit, Mich.	434	244	113	22	14	12	Tucson, Ariz.	97	67	26	3	-	-
Evansville, Ind.	57	36	16	3	1	3	PACIFIC	1,960	1,262	458	102	65	68
Fort Wayne, Ind.	71	45	19	2	4	8	Berkeley, Calif.	19	16	3	-	-	1
Gary, Ind.	22	14	5	1	1	2	Fresno, Calif.	102	69	20	6	5	4
Grand Rapids, Mich.	57	40	11	2	3	7	Glendale, Calif.	32	25	5	2	-	2
Indianapolis, Ind.	194	115	55	6	12	5	Honolulu, Hawaii	71	42	16	3	6	1
Madison, Wis.	58	42	11	1	1	10	Long Beach, Calif.	88	53	19	4	6	2
Milwaukee, Wis.	165	107	43	7	5	6	Los Angeles, Calif.	623	377	168	36	18	18
Peoria, Ill.	81	55	16	3	4	14	Oakland, Calif.	74	47	20	2	4	2
Rockford, Ill.	59	41	5	5	2	6	Pasadena, Calif.	37	25	10	-	2	-
South Bend, Ind.	67	50	14	2	1	2	Portland, Oreg.	165	123	27	6	3	5
Toledo, Ohio	137	79	37	9	3	2	Sacramento, Calif.	70	43	20	4	2	2
Youngstown, Ohio	69	45	21	1	1	-	San Diego, Calif.	150	98	32	12	2	7
WEST NORTH CENTRAL	868	578	188	41	30	50	San Francisco, Calif.	174	113	37	9	6	4
Des Moines, Iowa	54	32	14	5	1	4	San Jose, Calif.	62	44	11	2	1	2
Duluth, Minn.	25	17	5	-	1	6	Seattle, Wash.	176	110	38	13	6	5
Kansas City, Kans.	42	24	8	7	2	1	Spokane, Wash.	63	44	18	-	1	9
Kansas City, Mo.	148	102	29	2	9	9	Tacoma, Wash.	54	33	14	3	3	4
Lincoln, Nebr.	36	29	7	2	-	3	TOTAL	14,222	9,045	3,488	783	479	855
Minneapolis, Minn.	96	72	16	3	4	4	Expected Number	12,422	7,591	3,188	732	432	500
Omaha, Nebr.	136	67	28	5	3	2							
St. Louis, Mo.	218	144	53	9	4	15							
St. Paul, Minn.	77	51	15	6	2	3							
Wichita, Kans.	64	43	13	2	4	3							

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

The Morbidity and Mortality Weekly Report, circulation 70,000, is published by the Center for Disease Control, Atlanta, Georgia. 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.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

Send mailing list additions, deletions, and address changes to: Center for Disease Control, Attn.: Distribution Services, GSO, 1-SB-36, Atlanta, Georgia 30333. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

Botulism – continued

the actual incidence, full clinical spectrum, mode of transmission, and other risk factors associated with this toxicogenic disease.

Indications for the use of botulinum antitoxin or oral antibiotics in the therapy of infant botulism are at present uncertain. It is not known whether administration of either will ameliorate the disease, shorten hospitalization, or diminish the risk of serious complications.

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Epidemiologic Notes and Reports**False-Positive Gram Stains Due to Non-Viable Organisms in Sterile Commercial Transport Medium – Colorado, Ohio**

Reports of contamination of commercial Amies transport medium with non-viable organisms have been received independently from a Colorado and an Ohio hospital. Contamination was recognized because of false-positive results of Gram stains done on clinical specimens. In the hospital in Colorado, antimicrobial therapy directed against gram-negative rods was given unnecessarily to 2 patients. The problem is under investigation by the state health departments, CDC, and the Food and Drug Administration (FDA). Details appear below.

Colorado:

Case 1: On November 30, 1977, an 18-year-old male underwent surgery at a Colorado hospital following a gun-shot wound in the leg. A Gram stain of materials swabbed from the wound at surgery showed gram-negative rods, and therapy with penicillin and gentamicin was begun. Cultures remained negative, however, and antibiotics were discontinued after 5 days.

Case 2: A month later at the same hospital, a 17-year-old male had a ventricular-peritoneal shunt implanted for hydrocephalus due to a brain tumor. A Gram stain of cerebrospinal fluid collected on a swab during surgery revealed gram-negative rods. Consequently, intravenous and intraventricular gentamicin and intravenous chloramphenicol were begun. As in the first case, cultures remained negative, and antibiotics were discontinued after 2 days.

Subsequently, Gram stains were performed on Amies transport medium from 15 culture collection devices (Securline Culture Collection Transport Systems, Precision Dynamics Corporation, Burbank, California 91504) from each of 2 lots (numbers 306 and 307) currently in hospital supplies. Examination of the medium showed pleomorphic gram-negative rods in all 30 specimens, gram-positive rods in 13, and gram-positive cocci in 6. Cultures of the Amies transport medium from 10 devices were negative after 14 days of incubation at 30 C and 35 C.

Ohio: On January 9, 1978, a hospital in Ohio reported the presence of non-viable organisms in Amies transport medium from a different lot (number 276) of culture collection devices from the same manufacturer. Contamination was

suspected when intraoperative swabs taken on clean surgical wounds from 3 patients undergoing total hip replacement were positive by Gram stain, but negative on culture. Therapeutic decisions in these cases were not based on the results of the Gram stains. Subsequent examination of medium from 11 devices from the implicated lot showed that all were contaminated with gram-negative and gram-positive organisms. As in the previous instance, the medium was negative on culture.

FDA is currently examining additional culture collection devices from both hospitals and is inspecting the manufacturing plant. Both hospitals have decided to replace the Securline Culture Collection Transport Systems with a different brand of culture sets, and studies are in progress to determine the extent to which false-positive Gram stains may have influenced clinical decisions.

Reported by J Batt, RL Cox, CH Hoke, WM Kirsch, S Merritt, LB Reller, University of Colorado Medical Center, Denver; T Vernon, State Epidemiologist, Colorado State Dept of Health; K Currie, TL Gavan, G Hall, J Serkey, E Smith, The Cleveland Clinical Foundation; TJ Halpin, State Epidemiologist, Ohio State Dept of Health; Food and Drug Administration; Hospital Infections Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: In the past, the presence of non-viable organisms in commercial diagnostic products has resulted in confusion in interpreting Gram stains. Contamination of cerebrospinal fluid collection tubes in lumbar puncture sets has resulted in erroneous diagnosis and treatment for meningitis (1,2). Also, the presence of viable organisms in evacuated blood collection tubes has resulted in pseudobacteremia (3,4). Physicians should use caution in interpreting Gram stains performed on specimens transported in commercial culture collection sets, and, when possible, clinical specimens should be delivered directly to the laboratory.

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International Notes**Influenza — People's Republic of China, Taiwan, Philippines, United Kingdom, United States**

People's Republic of China: (The following information was obtained from a report that will appear in the Weekly Epidemiological Record, January 20, 1978.)

On January 11, 1978, the Chinese Academy of Medical Sciences reported to the World Health Organization that during the latter half of May 1977 several influenza A (H1N1) viruses were isolated from children in the northeastern city of Tientsin and in the nearby provinces of Liaoning and Kirin. From July to October the epidemic spread south to many other areas of China. Clinical illness was seen most often in children and adolescents, ages 8 to 20.

Taiwan: Isolations of the H3N2 and the H1N1 strains of influenza A, as well as isolations of influenza B, have been reported from the Naval Medical Research Unit #2 (NAMRU-2) in Taiwan. An H3N2 isolate, preliminarily identified as A/Victoria/3/75-like, was recovered from a basketball player whose team had recently returned from a tournament in Hong Kong December 26-31. Illness among the 40 team members, ages 15-18, had begun on December 28, with the overall clinical attack rate subsequently reaching 80%. Since teams from throughout Southeast Asia participated in the tournament, it is possible that this H3N2 virus was imported into Hong Kong, which otherwise has reported only H1N1 strains in the past few months. Since the last MMWR report on influenza (7), 2 H1N1 influenza viruses and several more influenza B viruses have been isolated from Taiwanese children and adolescents in Taipei. According to NAMRU-2, however, the Taiwanese National Health Administration has not observed an increase in influenza-like illness among patients seen in Taipei hospitals.

Philippines: NAMRU-2 reports the isolation of an H1N1 virus from a 21 year old in Manila who became ill in early December 1977.

United Kingdom: The first isolations of influenza virus

from sporadic cases this winter have been reported. Two viruses similar to A/USSR/90/77 (H1N1) were isolated from cases in Bath and Leyland, while 2 H3N2 strains from cases in Bath and Manchester were found to resemble A/Victoria/3/75 and A/Texas/1/77, respectively.

United States: Influenza outbreaks continue to be widespread in 10 states: Pennsylvania, New York, New Jersey, Rhode Island, Illinois, Michigan, Indiana, Wisconsin, and Oregon. Regional outbreaks are occurring in 18 other states or territories.

Pneumonia and influenza deaths reported for the weeks January 7, and January 14, 1978, from 121 cities have exceeded the epidemic threshold. These excess deaths, generally considered attributable to epidemic influenza infections, exceed the expected number of deaths most significantly in the New England Region (specifically Massachusetts, Rhode Island, Connecticut), Middle Atlantic Region (New York, Pennsylvania, New Jersey), East North Central Region (Ohio, Illinois, Michigan, Indiana), and South Atlantic Region (Georgia, Maryland, North Carolina, Florida, Virginia, District of Columbia, Delaware), where substantial influenza activity has been reported by epidemiologists since early December.

Influenza infections have been ascribed to only A/Texas and A/Victoria-like viruses. No H1N1 viruses have been isolated in the United States.

Reported by J Olson, PhD, T Ksiazek DVM, NAMRU-2, Taiwan; WHO Collaborating Center for Influenza, London; appropriate State and Territorial Epidemiologists and appropriate State Laboratory Directors; WHO Collaborating Center for Influenza, Respiratory Virology Br, Virology Div, Bur of Laboratories; Surveillance and Assessment Br, Immunization Div, Bur of State Services, CDC.

Reference

1. MMWR 27:8, 1978

Erratum, Vol. 26, No. 52

p 428 In the Recommendation of the Public Health Service Advisory Committee on Immunization Practices, "Immune Globulins for Protection Against Viral Hepatitis," second column, second paragraph, ninth line, the incubation period for Hepatitis B in a group given HBIg should have been a mean of 118 days, not 188 days, as written.

**U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333**

Director, Center for Disease Control, William H. Foege, M.D.
Director, Bureau of Epidemiology, Philip S. Brachman, M.D.
Editor, Michael B. Gregg, M.D.
Managing Editor, Anne D. Mather, M.A.
Chief, MMWR Statistical Activity, Dennis J. Bregman, M.S.

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