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International Notes

Multiply Antibiotic-Resistant O-Group 1 *Vibrio cholerae* — Bangladesh

For the past decade, a representative sample of O-group 1 *Vibrio cholerae* specimens collected from patients presenting to the Dacca Hospital and the Matlab Field Station of the International Center for Diarrheal Disease Research, Bangladesh (ICDDR,B), have been screened for antibiotic sensitivity. The observed pattern of uniform sensitivity changed little during that time. Recently, however, 5 of 28 (18%) isolates tested from the Matlab field area in a 6-week period were found to be resistant *in vitro* to tetracycline, ampicillin, kanamycin, streptomycin, and trimethoprim sulfamethoxazole. These vibrios belonged to the El Tor biotype; they included both Ogawa and Inaba serotypes and were El Tor phage-type 4, similar to current isolates in Bangladesh. The abrupt emergence of multiple drug resistance suggested that an R-plasmid was involved.

To confirm these observations, 167 additional vibrio specimens obtained from patients of the Matlab Field Station were tested. The earliest resistant strain was identified from a stock culture isolated from a patient at the beginning of the recent seasonal epidemic; 27 more multiply antibiotic-resistant vibrio (MARV) isolates were subsequently identified. The percentage of isolates demonstrating resistance increased from 5%, in the first month of the epidemic, to 13%, 28%, 36%, and 15% for the next 4 months.

In retrospect, physicians at the Matlab Field Station had made clinical observations consistent with these *in vitro* resistance patterns. Some cholera patients, contrary to customary hospital course, continued to purge heavily after 2 days of hospitalization and 8 doses of tetracycline. Vibrios continued to be cultured from the stools of at least 2 patients treated with more than 12 doses of tetracycline. A retrospective examination of clinical records of resistant and nonresistant cholera cases indicated that while all cholera patients were indistinguishable at presentation, patients with MARVs purged for a longer period than those infected with sensitive strains.

Two cholera patients with the same antibiotic resistance pattern were identified at the Dacca Hospital. The first patient, a 25-year-old woman, arrived in Dacca from Matlab just before she became ill and was treated with oral therapy alone. The second patient, a 10-year-old boy, was traced to his home in Bajitpur, Mymensingh District, Bangladesh—70 kilometers northeast of Dacca. Neither patient had a history of travel outside of Bangladesh or of antibiotic use.

The plasmid coding for multiple antibiotic resistance has been transferred from one of the resistant vibrios to *Escherichia coli* K-12F$^-$lac$^+$Nx^r receptor strain in the ICDDR,B laboratory. Further epidemiologic and microbiologic studies are in progress.

Editorial Note: The emergence of plasmid-borne, multiple antibiotic resistance in cholera has been documented previously from *in vitro* studies of O-group 1 *V. cholerae* and from occasional clinical isolates (*1,2*). The first outbreak, however, was only recently reported from Tanzania (*3*). The pattern of resistance in these vibrios was different from that

Vibrio cholerae – Continued

in Bangladesh but included tetracycline, the current drug of choice for cholera. While antibiotics are not essential to the treatment of the disease, they shorten the duration and volume of purging, the duration of excretion of vibrios, and the amount of fluid replacement required. Further *in vitro* studies and, perhaps, clinical trials will be needed to identify alternative antibiotics. The Bangladesh MARV is sensitive to furazolidone *in vitro.* Physicians, when treating cholera patients not responding to tetracycline, should consider antibiotic resistance. This can be confirmed by documenting continuing vibrio excretion (by dark field microscopy or stool culture) in patients given more than 8 doses of tetracycline, or by antibiotic susceptibility tests on the isolate. These patients will require more oral and/or intravenous therapy than other cholera patients. Adequate fluid and electrolyte replacement should be maintained until purging stops and fluid balance is re-established. It would also appear that the efficacy of tetracycline prophylaxis for *V. cholerae* has been compromised in this, and possibly other, cholera-endemic areas.

Although this outbreak was first identified in Matlab, an area under intense microbiological surveillance, the organism is probably more widely spread, an impression supported by the case from the Mymensingh District. The geographic distribution of this resistance pattern will not be known until antibiotic sensitivity testing of vibrios is performed in all countries.

Further investigations will be needed to predict whether this change in antibiotic sensitivity will be long-standing or reversible, and what its clinical consequences and public health importance will be.

Reported by MI Huq, ARMA Alim, and Dr LN Mutanda, Microbiology Br, Dr Md Yunus, Physician-in-Charge, Matlab Field Station, Dr MU Khan, Head, Disease Transmission Working Group, ICDDR,B.

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3. Mhalu FS, Mmari PW, Ijumba J. Rapid emergency of El Tor *Vibrio cholerae* resistant to antimicrobial agents during the first six months of fourth cholera epidemic in Tanzania. Lancet 1979; 1:345-7.

Follow-up on Diarrhea in Travelers to Puerto Vallarta, Mexico

Interviews with 2 groups of travelers who visited Puerto Vallarta in late December 1979 and early January 1980 have confirmed reports of a high frequency of acute diarrhea in visitors to Puerto Vallarta (*1*). Analysis of risk factors for 1 of these groups, who stayed at a condominium complex in Puerto Vallarta during the last week of December and first 10 days of January, has revealed that diarrhea was significantly associated with ingestion of salads, cold sandwiches, milk, uncooked vegetables, and tap water ($p<.05$). Where these patients drank tap water was not ascertained. The condominium complex receives water from the Puerto Vallarta municipal system, which it then filters and chlorinates before distribution. Analysis of data on the other group of travelers, who stayed at a nearby hotel during the same period, revealed that diarrheal illness was associated with ingestion of ice ($p<.04$) and with eating food at a fiesta held on December 30 ($p<.001$).

Colicin-typing of *Shigella sonnei* isolates (*1*) obtained from residents of Washington and California who had developed diarrhea during or following a visit to Puerto Vallarta in December or January has revealed that all 20 isolates tested are colicin type 9.

San Francisco surveys: To determine attack rates of acute diarrhea in recent travelers, persons on selected flights to San Francisco from Mexico were interviewed; travelers returning from Mazatlan, Mexico, were used as a control group. On February 11 and 12, 15 of 62 passengers (24%) who had visited only Puerto Vallarta and 23 of 145 passengers

Diarrhea – Continued

(16%) who had visited only Mazatlan experienced diarrhea; this difference is not statistically significant. On March 3 and 4, 15 of 64 persons (23%) who had visited only Puerto Vallarta had experienced diarrhea, compared with 10 of 64 passengers (16%) who had visited only Mazatlan; this difference is also not significant.

During the questionnaire survey on February 11 and 12, 23 travelers had rectal swabs. None were positive for *Shigella* although non-O1 *Vibrio cholerae* was isolated from an ill visitor to Mazatlan and Puerto Vallarta, *Campylobacter fetus* subspecies *jejuni* was isolated from an ill visitor to Puerto Vallarta and a neighboring village, and *Salmonella schwarzengrund* and *S. duesseldorf* were isolated from a non-ill visitor to Puerto Vallarta. All 23 stools were tested for the presence of enterotoxigenic *Escherichia coli. E. coli* producing heat-labile toxin (LT) was isolated from the stools of 2 ill persons who had visited only Puerto Vallarta. *E. coli* strains which produced only LT and only heat-stable toxin (ST) were found in the stool of an ill visitor to Puerto Vallarta and Mazatlan. An ST-producing *E. coli* was found in the stool of the well visitor to Puerto Vallarta from whom the 2 *Salmonella* serotypes were isolated.

Wisconsin surveys: The Wisconsin State Department of Health and Social Services also conducted a questionnaire survey of 2 groups of visitors to Puerto Vallarta in February in response to reports of illness in such travelers. Only preliminary results are available. In a group that visited Puerto Vallarta from February 2-9, the attack rate of diarrhea was 79%. The median duration of illness was 10 days. Stool cultures of 3 ill persons were negative for *Salmonella* and *Shigella*. In a group that visited Puerto Vallarta from February 9-16, the attack rate for diarrheal illness was 87%. The median duration of illness was 8 days.

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Editorial Note: Data obtained in the surveys of travelers arriving from Mexico by plane on February 11 and 12 and March 3 and 4 suggest that the diarrhea attack rate may be similar in Puerto Vallarta and Mazatlan. An unknown number of these individuals may have been in the incubation period of a diarrheal illness at the time of these surveys so that attack rates may ultimately have been higher in 1 or more of these groups. The preliminary results of the survey in Wisconsin suggest that there was a high incidence in visitors to Puerto Vallarta in early and mid-February.

The finding of the identical colicin type in *Shigella* isolates from many groups who visited Puerto Vallarta in December and early January suggests that there may have been a common-source outbreak of shigellosis at that time. However, no data are available on the distribution of colicin types in Puerto Vallarta.

Until it is clear whether or not there is a continuing high incidence of acute diarrhea among travelers to Puerto Vallarta, tap water, salads, cold sandwiches, uncooked vegetables, and ice should continue to be avoided by travelers to this town as has previously been recommended for travelers to areas where sanitation may not be optimal (*2*). Such travelers also should be advised by travel agencies, health departments, airlines, and shipping companies to eat only cooked food that is still hot and fruit that they peel themselves and to drink only the following: water that has been boiled or adequately disinfected with iodine or chlorine compounds, bottled carbonated water, soft drinks, beer, or wine. Unpasteurized milk and milk products and beverages containing ice should be avoided.

References

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Current Trends

Reye Syndrome — United States

As of March 7, 1980, 335 cases of Reye syndrome were reported to CDC by state health departments. Thirty-eight reported at least 1 case.

In the 3-month period from December 1, 1979, to February 29, 1980, the national incidence of Reye syndrome was 0.29 cases per 100,000 persons less than 18 years of age; this incidence is similar to the rate of 0.25 cases per 100,000 observed in the comparable period of 1973-74. In both periods influenza B was epidemic in the United States (*1*). From December 1978 to February 1979, Reye syndrome was temporally and geographically associated in many states with influenza A(H1N1). The comparable national incidence in that period was 0.31 per 100,000. Although both influenza A(H3N2) and influenza A(H1N1) were prevalent in 1978, their activity was not associated with an increased incidence of Reye syndrome (0.17 cases per 100,000).

Preliminary data for 1980 reveal a case-fatality rate of 12%, which is less than half the rate reported in previous years. This lower case-fatality rate is consistent with increased reporting of less serious illness in 1980, with earlier case recognition, and with better treatment.

Reported by State and Territorial Epidemiologists; and Enteric and Neurotropic Viral Diseases Br, Viral Diseases Div, Bur of Epidemiology, CDC.

Reference

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TABLE I. Summary — cases of specified notifiable diseases, United States

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

DISEASE	10th WEEK ENDING		MEDIAN 1975-1979	CUMULATIVE, FIRST 10 WEEKS		MEDIAN 1975-1979
	March 8, 1980	March 10, 1979*		March 8, 1980	March 10, 1979*	
Aseptic meningitis	33	57	40	611	492	376
Brucellosis	3	1	3	34	14	32
Chickenpox	6,612	6,793	6,793	48,902	58,207	55,044
Diphtheria	–	7	7	1	40	40
Encephalitis: Primary (arthropod-borne & unspec.)	7	7	13	116	94	122
Post-infectious	2	8	5	22	34	34
Hepatitis, Viral: Type B	337	287	287	2,898	2,498	2,692
Type A	497	603	699	5,037	5,677	6,443
Type unspecified	264	200	199	2,124	1,892	1,673
Malaria	21	2	5	238	71	50
Measles (rubeola)	271	438	944	1,657	2,627	4,091
Meningococcal infections: Total	90	68	57	598	662	419
Civilian	90	67	57	594	661	417
Military	–	1	1	4	1	3
Mumps	585	654	654	2,826	3,571	5,909
Pertussis	15	21	15	197	276	236
Rubella (German measles)	170	332	460	801	1,989	2,671
Tetanus	1	–	–	6	5	7
Tuberculosis	577	496	615	4,601	4,887	5,336
Tularemia	4	2	1	16	25	14
Typhoid fever	4	6	6	44	68	68
Typhus fever, tick-borne (Rky. Mt. spotted)	–	2	2	6	13	10
Venereal diseases:						
Gonorrhea: Civilian	18,751	18,928	18,213	180,723	181,988	181,084
Military	626	481	481	5,222	5,376	5,376
Syphilis, primary & secondary: Civilian	595	464	464	5,092	4,633	4,633
Military	4	6	4	80	59	60
Rabies in animals	72	62	53	821	558	439

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1980		CUM. 1980
Anthrax	–	Poliomyelitis: Total	1
Botulism† (Calif. 1)	7	Paralytic (Calif. 1)	1
Congenital rubella syndrome (Ups. NY 1, Calif. 8)	21	Psittacosis†	15
Leprosy (Calif. 1)	29	Rabies in man	–
Leptospirosis†	9	Trichinosis (Conn. 1)	9
Plague	–	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	5

*Delayed reports received for calendar year 1979 are used to update last year's weekly and cumulative totals.

†Delayed report: Botulism: Ohio +1 (1980); Leptospirosis: Pa. +2 (1979); Psittacosis: Pa. +2 (1979)

TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 8, 1980, and March 10, 1979 (10th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1980	1980	1980	1980	CUM. 1980	1980	1979*	1980	1980	1980	1980	1980	CUM. 1980
UNITED STATES	33	3	6,612	–	1	7	7	2	337	497	264	21	238
NEW ENGLAND	2	–	839	–	–	2	–	2	11	6	9	1	19
Maine	–	–	189	–	–	–	–	1	1	–	–	–	3
N.H.†	–	–	72	–	–	–	–	–	2	1	–	–	1
Vt.	1	–	17	–	–	–	–	–	–	–	1	–	–
Mass.	–	–	220	–	–	–	–	–	1	1	8	1	11
R.I.	–	–	24	–	–	–	–	–	1	3	–	–	1
Conn.	1	–	317	–	–	2	–	1	6	1	–	–	3
MID. ATLANTIC	3	–	527	–	1	1	1	–	66	37	18	10	43
Upstate N.Y.	1	–	335	–	–	–	–	–	14	11	9	3	4
N.Y. City	2	–	72	–	1	–	1	–	25	7	3	3	20
N.J.†	–	–	NN	–	–	–	–	–	20	13	5	3	13
Pa.†	–	–	120	–	–	1	–	–	7	6	1	1	6
E.N. CENTRAL	6	–	2,819	–	–	–	3	–	31	79	21	–	3
Ohio†	1	–	311	–	–	–	1	–	4	14	2	–	1
Ind.†	–	–	177	–	–	–	1	–	6	8	7	–	–
Ill.	1	–	551	–	–	–	–	–	5	16	4	–	–
Mich.	4	–	1,245	–	–	–	1	–	11	36	7	–	1
Wis.	–	–	535	–	–	–	–	–	5	5	1	–	1
W.N. CENTRAL	2	1	959	–	–	–	–	–	19	35	8	–	6
Minn.	–	–	4	–	–	–	–	–	4	11	1	–	5
Iowa	1	–	443	–	–	–	–	–	4	5	1	–	1
Mo.	–	–	120	–	–	–	–	–	5	6	4	–	–
N. Dak.†	–	–	32	–	–	–	–	–	–	–	–	–	–
S. Dak.	–	–	14	–	–	–	–	–	–	2	–	–	–
Nebr.	–	–	78	–	–	–	–	–	–	3	–	–	–
Kans.	1	1	268	–	–	–	–	–	6	8	2	–	–
S. ATLANTIC	5	1	579	–	–	–	1	–	80	69	30	1	25
Del.†	–	–	9	–	–	–	–	–	1	1	–	–	–
Md.	–	–	65	–	–	–	–	–	8	3	8	–	5
D.C.	–	–	–	–	–	–	–	–	–	–	–	–	1
Va.†	–	–	5	–	–	–	–	–	9	9	5	1	8
W. Va.	–	–	122	–	–	–	–	–	4	1	–	–	1
N.C.	–	–	NN	–	–	–	1	–	6	7	2	–	3
S.C.	–	–	25	–	–	–	–	–	8	2	2	–	–
Ga.	–	–	3	–	–	–	–	–	18	13	–	–	2
Fla.	5	1	350	–	–	–	–	–	26	33	13	–	5
E.S. CENTRAL	–	1	160	–	–	1	1	–	13	24	3	–	1
Ky.	–	–	105	–	–	–	–	–	–	2	1	–	1
Tenn.	–	–	NN	–	–	1	1	–	7	8	–	–	–
Ala.	–	1	43	–	–	–	–	–	4	12	2	–	–
Miss.	–	–	12	–	–	–	–	–	2	2	–	–	–
W.S. CENTRAL	4	–	409	–	–	1	–	–	38	104	102	2	26
Ark.†	–	–	7	–	–	–	–	–	7	3	5	–	1
La.	–	–	NN	–	–	1	–	–	8	9	11	–	14
Okla.†	–	–	–	–	–	–	–	–	3	13	3	2	7
Tex.	4	–	402	–	–	–	–	–	20	79	83	–	4
MOUNTAIN	–	–	117	–	–	–	–	–	9	52	22	–	9
Mont.†	–	–	67	–	–	–	–	–	–	2	–	–	–
Idaho	–	–	6	–	–	–	–	–	–	–	–	–	–
Wyo.	–	–	–	–	–	–	–	–	–	–	–	–	1
Colo.	–	–	42	–	–	–	–	–	1	23	5	–	4
N. Mex.	–	–	1	–	–	–	–	–	–	–	–	–	–
Ariz.	–	–	NN	–	–	–	–	–	4	19	15	–	3
Utah	–	–	1	–	–	–	–	–	2	1	2	–	–
Nev.	–	–	–	–	–	–	–	–	2	7	–	–	1
PACIFIC	11	–	203	–	–	2	1	–	70	91	51	7	106
Wash.†	–	–	160	–	–	–	–	–	3	2	–	1	10
Oreg.	1	–	2	–	–	–	–	–	9	9	2	1	8
Calif.†	8	–	–	–	–	2	1	–	58	79	49	5	87
Alaska	–	–	11	–	–	–	–	–	–	1	–	–	1
Hawaii	2	–	30	–	–	–	–	–	–	–	–	–	–
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
P.R.†	–	–	25	–	–	1	–	–	1	2	9	–	–
V.I.	–	–	1	–	–	–	–	–	–	–	–	–	–
Pac. Trust Terr.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–

NN: Not notifiable. NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Asep. meng.: Wash. –1; Chickenpox: Ind. +54, Calif. +44; Enceph.: Ind. +1; Enceph. post: Ohio +3, Wash. –1, P.R. –1; Hep.B: Pa. +13, Ind. –2, Ark. –4; Hep. A: N.H. –1, Pa. +19, N.Dak. +1, Ark. +2, Mont. +1; Hep. unsp: Del. –1, Va. –2, Ark. –2, Mont. –1; Malaria: N.J. +1, Okla. –1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 8, 1980, and March 10, 1979 (10th week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	1980	1980	CUM. 1980	CUM. 1980
UNITED STATES	271	1,657	2,627	90	598	662	585	2,826	15	170	801	6
NEW ENGLAND	25	150	105	6	25	18	15	281	–	10	53	–
Maine	1	1	3	–	1	1	4	93	–	7	18	–
N.H.†	4	74	3	–	3	3	2	4	–	1	16	–
Vt.	23	72	3	–	1	–	–	–	–	–	–	–
Mass.	–	–	–	4	12	7	3	97	–	2	12	–
R.I.	1	2	100	–	1	–	2	10	–	–	–	–
Conn.	–	1	–	2	7	7	4	77	–	–	7	–
MID. ATLANTIC	121	365	129	9	95	97	131	352	3	21	59	1
Upstate N.Y.†	39	117	62	2	40	35	4	27	3	9	28	–
N.Y. City	7	81	60	7	30	27	1	23	–	5	17	–
N.J.	36	59	–	–	14	27	3	48	–	7	10	–
Pa.	39	128	7	–	11	8	123	254	–	–	4	1
E.N. CENTRAL	18	194	705	9	63	58	203	969	2	17	202	–
Ohio †	–	18	4	–	22	17	70	402	1	–	1	–
Ind.†	1	14	56	–	9	17	2	37	–	5	81	–
Ill.	2	47	316	2	8	–	16	115	–	–	30	–
Mich.	9	66	232	6	19	18	105	296	1	6	63	–
Wis.†	6	49	101	1	5	6	10	119	–	6	27	–
W.N. CENTRAL	39	226	304	5	22	20	6	100	1	13	84	1
Minn.	23	154	112	2	8	3	–	3	–	3	7	1
Iowa	–	1	1	1	3	3	–	12	–	–	1	–
Mo.	–	34	179	1	7	11	–	44	1	1	20	–
N. Dak.	–	–	3	–	1	1	–	3	–	–	3	–
S. Dak.	–	–	1	–	2	1	–	–	–	–	–	–
Nebr.	3	6	–	–	–	–	–	7	–	–	–	–
Kans.	13	31	8	1	1	1	6	31	–	9	53	–
S. ATLANTIC	31	418	319	20	137	175	20	267	2	9	82	2
Del.	–	1	–	–	–	2	–	24	–	–	–	–
Md.	–	10	5	3	13	8	1	83	–	–	–	–
D.C.	–	–	–	–	–	–	–	1	–	–	–	–
Va.	13	85	20	–	12	31	3	23	–	–	3	1
W. Va.†	4	9	31	–	3	3	6	33	–	1	8	–
N.C.	–	29	40	5	27	22	1	47	–	–	15	–
S.C.	–	–	36	2	16	27	2	10	–	2	35	1
Ga.	1	191	2	5	32	28	–	–	1	–	–	–
Fla.	13	93	185	5	34	54	7	46	1	6	21	–
E.S. CENTRAL	1	48	44	12	62	50	180	530	1	6	34	–
Ky.	1	29	8	4	18	11	179	500	–	4	14	–
Tenn.	–	6	6	1	15	14	–	12	1	2	19	–
Ala.	–	12	24	4	18	14	–	4	–	–	1	–
Miss.	–	1	6	3	11	11	1	14	–	–	–	–
W.S. CENTRAL	14	72	318	11	73	116	10	79	4	6	30	–
Ark.†	–	1	5	–	4	12	–	10	1	1	1	–
La.	–	5	95	3	26	55	6	15	–	–	2	–
Okla.†	6	7	3	–	4	13	–	–	1	–	–	–
Tex.	8	59	215	8	39	36	4	54	2	5	27	–
MOUNTAIN	7	40	60	1	23	32	7	72	–	6	22	–
Mont.	1	1	16	–	1	2	1	21	–	–	–	–
Idaho	–	–	2	–	3	3	1	5	–	–	–	–
Wyo.	–	–	–	–	1	–	–	–	–	–	–	–
Colo.	–	1	4	–	8	1	3	17	–	1	1	–
N. Mex.	–	–	10	–	–	2	–	–	–	–	–	–
Ariz.†	3	15	12	–	5	20	2	11	–	3	7	–
Utah	3	21	13	–	1	3	–	15	–	2	11	–
Nev.	–	2	3	1	4	1	–	3	–	–	3	–
PACIFIC	11	124	635	17	98	96	13	176	2	82	235	2
Wash.†	–	21	364	1	16	12	3	58	–	2	18	–
Oreg.	–	–	3	6	16	8	2	28	–	–	20	–
Calif.	9	98	231	10	65	71	8	85	2	80	196	2
Alaska	2	2	6	–	1	1	–	3	–	–	1	–
Hawaii	–	3	31	–	–	4	–	2	–	–	–	–
Guam	NA	–	–	–	–	–	NA	3	NA	NA	–	–
P.R.	4	15	61	–	4	–	3	27	1	–	2	2
V.I.	1	4	1	–	–	2	–	1	–	–	–	–
Pac. Trust Terr.	NA	–	3	–	–	1	NA	–	NA	NA	–	–

NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Measles: N.H. +1, Ups. NY –1, Ind. –2, Wis. –5, W.Va. –1, Okla. +29, Ariz. –1; Men. inf.: Ohio +2, Ind. +1, Ark. –1, Wash. –2; Mumps: N.H. +2; Rubella: Ariz. +1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 8, 1980, and March 10, 1979 (10th week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1980	CUM. 1980	CUM. 1980	1980	CUM. 1980	1980	CUM. 1980	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	CUM. 1979*	CUM. 1980
UNITED STATES	577	4,601	16	4	44	–	6	18,751	180,723	181,988	595	5,092	4,633	821
NEW ENGLAND	20	138	–	–	4	–	–	341	4,890	4,888	33	162	83	8
Maine	1	8	–	–	–	–	–	22	324	323	–	–	1	8
N.H.	–	2	–	–	–	–	–	13	162	150	–	–	4	–
Vt.	1	5	–	–	–	–	–	9	145	78	–	1	–	–
Mass.†	14	59	–	–	2	–	–	146	1,930	1,919	24	102	53	–
R.I.†	1	20	–	–	1	–	–	8	273	403	3	5	3	–
Conn.	3	44	–	–	1	–	–	143	2,056	2,015	6	54	22	–
MID. ATLANTIC	156	891	–	1	5	–	1	2,941	20,679	19,013	71	719	715	2
Upstate N.Y.	42	176	–	–	–	–	–	384	3,129	2,586	7	54	51	–
N.Y. City	57	336	–	–	3	–	–	750	8,237	7,220	43	475	486	–
N.J.	37	187	–	–	1	–	–	1,212	4,145	3,898	11	94	91	2
Pa.	20	192	–	1	1	–	1	595	5,168	5,309	10	96	87	–
E.N. CENTRAL	52	594	1	1	6	–	–	2,943	27,954	26,931	99	426	607	90
Ohio	23	115	–	–	–	–	–	261	7,718	6,924	19	82	133	2
Ind.	9	82	–	–	–	–	–	158	3,248	1,841	17	59	28	10
Ill.	–	217	–	–	3	–	–	1,544	7,289	8,965	55	164	345	53
Mich.	14	136	1	1	3	–	–	672	6,534	6,645	5	98	78	–
Wis.†	6	44	–	–	–	–	–	308	3,165	2,556	3	23	23	25
W.N. CENTRAL	5	137	8	–	–	–	2	793	7,971	8,872	5	54	60	240
Minn.	–	25	1	–	–	–	–	94	1,370	1,603	2	18	19	33
Iowa	–	11	4	–	–	–	–	94	907	1,210	–	3	6	56
Mo.	4	64	2	–	–	–	2	361	3,314	3,686	3	31	21	69
N. Dak.	–	2	–	–	–	–	–	15	112	154	–	–	–	20
S. Dak.†	–	6	–	–	–	–	–	23	273	283	–	–	–	39
Nebr.†	–	6	1	–	–	–	–	48	664	582	–	2	1	4
Kans.	1	23	–	–	–	–	–	158	1,331	1,354	–	–	13	19
S. ATLANTIC	125	1,060	3	–	13	–	3	4,348	44,581	43,692	129	1,221	1,182	76
Del.	4	19	–	–	1	–	–	77	679	678	–	5	7	–
Md.	11	128	1	–	2	–	–	585	4,408	5,162	12	94	80	–
D.C.	4	53	–	–	2	–	–	281	3,286	2,681	9	79	83	–
Va.	25	121	–	–	2	–	–	241	3,748	4,067	5	104	122	–
W. Va.	4	46	–	–	1	–	–	45	539	630	–	4	20	2
N.C.	12	188	–	–	1	–	2	727	7,093	6,903	5	83	115	–
S.C.†	10	82	–	–	1	–	–	268	4,183	3,671	7	61	61	13
Ga.	19	138	2	–	–	–	1	820	7,946	8,218	39	362	290	41
Fla.	36	285	–	–	3	–	–	1,304	12,699	11,682	52	429	404	20
E.S. CENTRAL	47	433	1	1	2	–	–	1,533	14,785	16,044	58	414	319	43
Ky.†	7	87	–	–	1	–	–	166	2,121	2,207	3	24	31	23
Tenn.	16	145	1	–	–	–	–	483	5,242	5,566	24	174	143	17
Ala.	13	130	–	1	1	–	–	521	4,222	4,912	15	74	62	3
Miss.	11	71	–	–	–	–	–	363	3,200	3,359	16	142	83	–
W.S. CENTRAL	65	378	–	–	–	–	–	2,673	23,490	24,755	85	960	781	263
Ark.	17	30	–	–	–	–	–	168	1,763	2,002	5	35	25	33
La.	6	88	–	–	–	–	–	466	3,756	4,092	13	211	159	3
Okla.	5	42	–	–	–	–	–	245	2,391	2,139	–	13	12	32
Tex.	37	218	–	–	–	–	–	1,794	15,580	16,522	67	701	585	195
MOUNTAIN	21	133	1	–	3	–	–	723	6,989	7,173	5	118	60	17
Mont.	–	5	–	–	1	–	–	28	259	410	–	–	4	1
Idaho	–	4	–	–	–	–	–	52	340	320	2	7	3	–
Wyo.†	–	9	–	–	–	–	–	30	205	193	1	4	3	–
Colo.	4	14	–	–	1	–	–	195	1,728	1,956	1	33	24	–
N. Mex.†	4	28	–	–	–	–	–	75	1,017	926	–	18	7	2
Ariz.	10	61	1	–	1	–	–	210	1,912	1,986	–	40	11	14
Utah	1	5	–	–	–	–	–	21	336	331	–	4	1	–
Nev.	2	7	–	–	–	–	–	112	1,192	1,051	1	12	7	–
PACIFIC	86	837	2	1	11	–	–	2,456	29,384	30,620	110	1,018	826	82
Wash.†	12	76	–	–	–	–	–	NA	1,977	2,517	NA	92	42	–
Oreg.	6	45	–	–	–	–	–	193	1,921	2,054	1	21	44	–
Calif.	67	701	2	1	11	–	–	2,166	24,386	24,577	109	892	721	82
Alaska	–	1	–	–	–	–	–	67	701	968	–	2	2	–
Hawaii	1	14	–	–	–	–	–	30	399	504	–	11	17	–
Guam	NA	2	–	NA	–	NA	–	NA	12	20	NA	–	–	–
P.R.	1	21	–	–	–	–	–	74	453	362	18	103	111	10
V.I.	–	–	–	–	–	–	–	3	33	30	1	6	–	–
Pac. Trust Terr.	NA	–	–	NA	–	NA	–	NA	–	79	NA	–	–	–

NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: TB: Ky. –1, N.Mex. –6; GC: R.I. +1 mil., Wis. –3 civ., S.C. +95 mil., Wyo. +4 mil., Wash. +321 civ.; An. rabies: Mass. +1, S. Dak. +24, Nebr. –1.

TABLE IV. Deaths in 121 U.S. cities,* week ending March 8, 1980 (10th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
NEW ENGLAND	811	583	154	37	20	85
Boston, Mass.	262	173	52	19	11	31
Bridgeport, Conn.	48	35	9	3	–	1
Cambridge, Mass.	40	32	8	–	–	8
Fall River, Mass.	41	35	6	–	–	2
Hartford, Conn.	34	24	7	2	1	3
Lowell, Mass.	23	19	4	–	–	2
Lynn, Mass.	31	24	5	2	–	3
New Bedford, Mass.	20	15	5	–	–	1
New Haven, Conn.	54	33	12	5	–	3
Providence, R.I.	77	55	20	1	–	12
Somerville, Mass.	9	8	1	–	–	3
Springfield, Mass.	62	47	10	3	2	5
Waterbury, Conn.	42	35	4	1	1	4
Worcester, Mass.	68	48	11	1	5	7
MID. ATLANTIC	2,855	1,996	594	151	70	177
Albany, N.Y.	48	32	10	3	3	2
Allentown, Pa.	20	16	–	4	–	–
Buffalo, N.Y.	169	124	34	1	4	11
Camden, N.J.	40	26	10	2	2	1
Elizabeth, N.J.	36	30	6	–	–	1
Erie, Pa.†	31	19	9	2	–	1
Jersey City, N.J.	60	42	10	3	4	1
Newark, N.J.	98	55	30	6	4	10
N.Y. City, N.Y.	1,560	1,082	325	95	35	78
Paterson, N.J.	32	21	5	5	1	1
Philadelphia, Pa.†	234	157	50	12	10	21
Pittsburgh, Pa.†	71	48	18	3	1	3
Reading, Pa.	41	31	7	3	–	4
Rochester, N.Y.	156	117	28	7	2	19
Schenectady, N.Y.	36	29	7	–	–	2
Scranton, Pa.†	28	18	9	1	–	5
Syracuse, N.Y.	84	57	22	2	2	3
Trenton, N.J.	47	39	7	–	1	3
Utica, N.Y.	33	26	4	1	1	7
Yonkers, N.Y.	31	27	3	1	–	4
E.N. CENTRAL	2,543	1,614	608	154	89	110
Akron, Ohio	79	54	13	2	7	–
Canton, Ohio	46	32	9	3	1	5
Chicago, Ill.	563	345	130	49	19	24
Cincinnati, Ohio	164	117	32	7	4	14
Cleveland, Ohio	182	121	45	8	2	6
Columbus, Ohio	179	115	40	13	5	9
Dayton, Ohio	130	76	40	6	3	5
Detroit, Mich.	304	178	80	21	20	8
Evansville, Ind.	53	39	11	1	1	4
Fort Wayne, Ind.	61	33	15	9	3	8
Gary, Ind.	17	11	3	2	–	1
Grand Rapids, Mich.	71	54	13	3	–	8
Indianapolis, Ind.	167	89	57	6	7	4
Madison, Wis.	33	21	7	2	2	–
Milwaukee, Wis.	192	125	51	10	2	8
Peoria, Ill.	46	31	7	4	3	1
Rockford, Ill.	40	27	9	2	–	4
South Bend, Ind.	43	27	12	1	–	–
Toledo, Ohio	115	72	27	4	8	–
Youngstown, Ohio	58	47	7	1	2	1
W.N. CENTRAL	840	549	181	41	44	61
Des Moines, Iowa	79	62	10	3	3	5
Duluth, Minn.	28	23	4	–	–	2
Kansas City, Kans.	35	19	8	3	1	4
Kansas City, Mo.	130	83	28	9	4	4
Lincoln, Nebr.	26	18	5	1	–	3
Minneapolis, Minn.	93	57	24	5	3	6
Omaha, Nebr.	79	52	19	2	4	3
St. Louis, Mo.	197	120	46	7	21	12
St. Paul, Minn.	67	50	7	6	3	2
Wichita, Kans.	106	65	30	5	5	20
S. ATLANTIC	1,324	798	343	96	47	57
Atlanta, Ga.	139	73	42	15	5	2
Baltimore, Md.	220	121	65	15	11	5
Charlotte, N.C.	68	35	17	9	4	4
Jacksonville, Fla.	120	82	27	6	2	8
Miami, Fla.	108	62	32	9	2	3
Norfolk, Va.	60	40	13	5	1	5
Richmond, Va.	72	48	13	5	2	6
Savannah, Ga.	42	20	13	3	5	2
St. Petersburg, Fla.	122	104	14	1	3	5
Tampa, Fla.	92	58	22	6	4	4
Washington, D.C.	229	125	67	21	8	12
Wilmington, Del.	52	30	18	1	–	1
E.S. CENTRAL	784	463	201	60	35	30
Birmingham, Ala.	129	78	32	5	12	–
Chattanooga, Tenn.	53	30	17	4	1	3
Knoxville, Tenn.	58	47	10	1	–	1
Louisville, Ky.	109	62	26	12	6	11
Memphis, Tenn.	212	119	61	19	7	7
Mobile, Ala.	58	39	9	4	2	4
Montgomery, Ala.	45	23	10	7	3	1
Nashville, Tenn.	120	65	36	8	4	3
W.S. CENTRAL	1,561	935	390	108	67	55
Austin, Tex.	48	35	9	2	1	3
Baton Rouge, La.	72	49	16	5	1	3
Corpus Christi, Tex.	50	20	14	4	9	–
Dallas, Tex.	222	140	53	13	7	12
El Paso, Tex.	58	35	15	5	2	5
Fort Worth, Tex.	104	58	30	6	9	4
Houston, Tex.	413	222	110	39	13	4
Little Rock, Ark.	55	35	13	2	4	3
New Orleans, La.	166	97	45	12	6	1
San Antonio, Tex.	193	113	55	15	6	5
Shreveport, La.	88	61	15	4	7	3
Tulsa, Okla.	92	70	15	1	2	12
MOUNTAIN	614	367	146	46	28	26
Albuquerque, N. Mex.	66	40	20	3	1	7
Colo. Springs, Colo.	37	21	9	5	2	4
Denver, Colo.	127	81	28	8	9	5
Las Vegas, Nev.	67	31	22	6	–	2
Ogden, Utah	22	12	6	1	–	2
Phoenix, Ariz.	136	87	26	10	6	3
Pueblo, Colo.	22	17	2	2	–	2
Salt Lake City, Utah	49	26	12	5	6	1
Tucson, Ariz.	88	52	21	6	4	–
PACIFIC	1,825	1,222	378	124	53	80
Berkeley, Calif.	19	15	1	1	1	–
Fresno, Calif.	62	40	11	4	4	3
Glendale, Calif.	17	13	2	1	1	–
Honolulu, Hawaii	63	41	11	7	2	6
Long Beach, Calif.	110	72	29	7	–	5
Los Angeles, Calif.	511	340	106	37	13	18
Oakland, Calif.	72	52	8	6	1	5
Pasadena, Calif.	28	20	6	–	2	1
Portland, Oreg.	154	112	31	4	4	6
Sacramento, Calif.	86	50	26	6	3	3
San Diego, Calif.	147	79	40	17	7	1
San Francisco, Calif.	168	121	34	7	4	10
San Jose, Calif.	148	94	31	14	5	5
Seattle, Wash.	152	106	27	11	5	14
Spokane, Wash.	42	29	8	1	1	–
Tacoma, Wash.	46	38	7	1	–	3
TOTAL	13,157	8,527	2,995	817	453	681

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

Epidemiologic Notes and Reports

Fatal Reaction to Smallpox Vaccination — California

On July 17, 1979, a 7-month-old child with spreading skin lesions was admitted to Moffitt Hospital at the University of California at San Francisco Medical Center. He had been vaccinated against smallpox 1 month earlier because of a 3-month history of recurrent mouth ulcers, suspected to be due to herpes simplex virus. The vaccination site never healed or scarred over. Satellite lesions developed 2 weeks later and spread quickly.

Laboratory tests revealed that the infant had a severe, combined immune deficiency, and vaccinia virus was isolated from skin lesions. The child was treated with intravenous vaccinia immune globulin (VIG) and *B*-thiosemicarbazone, and with topical adenine arabinoside, gentian violet, and rifampin. A thymic transplant was attempted, and transfer factor was given. The infant developed a severe pulmonary infection with *Pneumocystis carinii,* which was treated with pentamidine, trimethoprim, and sulfamethoxazole. A percutaneous lung aspirate was obtained, which yielded vaccinia virus. Respiratory failure ensued, and he required ventilatory support. He died on August 31.

Reported by D Wara, MD, D Chudwin, MD, MC Cowan, MD, Moffitt Hospital, University of California at San Francisco Medical Center; S Dritz, MD, City and County of San Francisco Dept of Public Health; RW Emmons, MD, PhD, RR Roberto, MD, California Dept of Health Services, in the California Morbidity Weekly Report, October 19, 1979; Immunization Div, Bur of State Services, Bur of Smallpox Eradication, Field Services Div, Bur of Epidemiology, CDC.

Editorial Note: This is the second recent report from California of an adverse reaction to the use of smallpox vaccination as proposed therapy for herpes simplex infection (*1*). Smallpox vaccination is not an effective treatment for recurrent herpes simplex infection or for any other condition. It can cause severe morbidity and occasionally death (*1,2*).

References

1. MMWR 1979; 28:265-7.
2. California State Dept of Health Services. Another tragic case from misuse of smallpox vaccine. California Morbidity Weekly Report, April 6, 1978.

Amebic Meningoencephalitis — Texas

In January 1979, a 2½-year-old, previously healthy boy living on Fort Bliss Army Base in El Paso, Texas, developed an insidious change in hand dominance from right to left. Over the next 6 months a progressive right hemiparesis developed, with acute exacerbations and increasing residual neurologic deficit. The boy was afebrile and free of other systemic symptoms.

On September 4, the boy was admitted to Children's Hospital in Pittsburgh, Pa. His physical examination was unremarkable except for splenomegaly, a right hemiparesis, and a right reflex preponderance. His white blood cell count was 8,000/mm^3, with a normal differential. The cerebrospinal fluid (CSF) was clear and colorless with normal protein and glucose levels, 13 monocytes, and 1 lymphocyte. Routine cultures for bacteria, fungi, and acid-fast organisms were negative. Quantitative immunoglobulins, complement levels, and skull films were normal. A computerized tomographic brain scan revealed multifocal areas of decreased density in the subcortical white matter, and a gyriform pattern of enhancement.

Meningoencephalitis – Continued

The patient remained clinically unchanged for the first 2 weeks of his hospitalization. On September 18, his temperature rose to 39 C, and nuchal rigidity and right-sided focal motor seizures developed. He was begun on prednisone, 2 mg/kg/day, for 7 days with no change in his clinical status. A lumbar puncture on September 24 was again culture negative but revealed an elevated protein level of 62 mg/dl, a glucose level of 38 mg/dl (serum level 88 mg/dl), 22 lymphocytes, and 5 monocytes. On September 26, he became comatose and unresponsive, with sluggishly reactive pupils and a spastic quadriparesis. His condition improved slightly following administration of intravenous mannitol. A cerebral angiogram was normal. A brain biopsy performed on September 26 revealed amebic trophozoites on permanent section morphologically suggestive of *Acanthamoeba*. On September 27, the boy was begun on miconazole, 140 mg intravenously, every 8 hours (30 mg/kg/day), and 5-fluorocytosine in a dose of 500 mg orally every 6 hours (140 mg/kg/day). Prednisone was rapidly tapered and discontinued. The patient's condition stabilized and gradually improved during the first 7 days of antimicrobial therapy. He became afebrile on the 14th day of treatment; then his level of consciousness again deteriorated, and he died on the 41st hospital day. The duration of illness from onset of symptoms was 7½ months. The patient was on continuous treatment with miconazole and 5-fluorocytosine from the time of diagnosis until his death 18 days later.

There was no history of swimming or wading in ponds, pools, puddles, or lakes, or of traveling outside the United States. The neurology service at the William Beaumont Army Medical Center in El Paso, Texas, has reported no other cases of granulomatous encephalitis or atypical aseptic meningitis among personnel or dependents stationed at Fort Bliss.

A serum specimen submitted to CDC was weakly positive at a non-diagnostic reciprocal titer of 8 by the immunofluorescent antibody assay for *Acanthamoeba*. Sections of the brain biopsy examined at the Department of Neuropathology at Presbyterian-University Hospital, Pittsburgh, showed amebae on electron microscopy that demonstrated some resemblance to the *Acanthamoeba-Hartmannella* group but were morphologically not consistent with *Naegleria*. Immunofluorescent studies on brain sections at the Veterans Administration Hospital in Gainesville, Florida, were negative for *Naegleria, Acanthamoeba, Hartmannella,* and *Vahlkampfia* species. Further ultra-structural studies are being conducted in Pittsburgh at the Presbyterian-University Hospital's Department of Neuropathology. Amebic cultures of brain biopsy material prepared separately at the University of Pittsburgh, the University of Florida, and CDC failed to grow. Hanging drop and cytological studies of the patient's CSF failed to demonstrate amebae.

Reported by HB Wessel, MD, J Hubbard, MD, Children's Hospital, AJ Martinez, MD Presbyterian-University Hospital, Pittsburgh, Pennsylvania; E Willaert, MD, AR Stevens, PhD, Veterans Administration Hospital and University of Florida, Gainesville, Florida; Parasitology Div, Bur of Laboratories, Parasitic Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: This case illustrates both the difficulties of establishing a specific diagnosis during the course of active meningeal infection with pathogenic free-living amebae and the therapeutic challenge of managing this rare but life-threatening group of infections.

Infection caused by *Naegleria* species is usually associated with swimming or bathing in waters containing these organisms. It usually has a short incubation period and a fulminant course lasting 10-14 days. These infections have shown some clinical response to amphotericin, a finding supported by *in vitro* studies (*1*). The only documented case of successfully treated *Naegleria* infection in the United States required intravenous and intrathecal amphotericin B and miconazole as well as oral rifampin (*2*).

By contrast, *Acanthamoeba* infections are usually more chronic in nature and are not associated with any known mode of transmission. Hematogenous dissemination with

Meningoencephalitis – Continued

appearance of the organism in skin, eye, and other organs has been reported (*3,4*), although this apparently did not occur in the present case. The role of immunosuppression or immune incompetence in this disease is unknown. The 12 best-documented cases of disseminated *Acanthamoeba* infection include 1 case of Hodgkin's disease, 1 diabetic, 1 alcoholic, 2 pregnant women, and 4 patients who received steroid therapy in the course of their treatment (*4-6*). The patient reported here demonstrated no detectable immune deficiency, but did receive steroid therapy during his treatment. Steroids have been shown to increase susceptibility to *Acanthamoeba* infections in mice (*7*). Immunodiagnostic testing in *Acanthamoeba* infections is frequently difficult. Of 9 cases studied by indirect fluorescent antibody tests, 6 showed positive tissue staining. Three of the 6 were also sero-positive; 3 cases were negative, as was the present case.

Laboratory facilities for the *in vitro* cultivation of amebae are not generally available, making it difficult to evaluate sporadic and geographically scattered cases in a uniform manner. The finding of amebae in CSF and the efforts to grow them in culture from pathologic specimens have been more successful in *Naegleria* infections than in those involving *Acanthamoeba* species.

References

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International Notes

Influenza – United States, Worldwide

United States: For the week ending March 1, 10 states (Maine, New Jersey, Pennsylvania, Michigan, Minnesota, Iowa, Kansas, Nebraska, South Dakota, and Oregon) reported widespread outbreaks of influenza to CDC. Four states (Connecticut, Rhode Island, Virginia, and California) reported regional outbreaks, and 29 states and cities reported sporadic influenza cases.

For the seventh consecutuve week the number of pneumonia and influenza (P&I) deaths reported from 117 U.S. cities remained above the epidemic threshold. For the

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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.

Influenza – Continued

week ending March 8, P&I deaths decreased from the previous week's total.

Reported by State Epidemiologists; Immunization Div, Bur of State Services, Consolidated Surveillance and Communications Activity, Bur of Epidemiology, CDC.

Worldwide: From October 1979 to February 1980, influenza A(H3N2) activity was reported from Australia, Bulgaria, China, Czechoslovakia, Finland, France, German Democratic Republic, Indonesia, Italy, Japan, Switzerland, the United Kingdom, and the USSR in addition to the United States. Epidemics or outbreaks associated with the virus occurred primarily in the USSR, Eastern Europe, Scandinavia, and Northern China; elsewhere, mainly sporadic isolates were reported.

Influenza A(H1N1) activity during the same period was reported in Bulgaria, Egypt, Iran, Japan, Madagascar, Pakistan, South Africa, the United States, and the USSR, with widespread outbreaks reported in Japan but local outbreaks or sporadic cases elsewhere. Isolates closely resemble either A/Brazil/11/78 or A/USSR/90/77. With the exception of parts of the United States and Canada, where substantial epidemics of influenza B have occurred, only sporadic cases of influenza B have occurred.

Reported by the World Health Organization in the Weekly Epidemiological Record, March 7, 1980.

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