

# MMWR

## MORBIDITY AND MORTALITY WEEKLY REPORT

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### International Notes

#### Measles — Khao I Dang Holding Center, Thailand

In mid-January 1980, outpatient clinics in the Khao I Dang Holding Center for Kampuchean refugees (1), then holding approximately 110,000 refugees, began reporting large numbers of cases of measles in children. Review of hospital inpatient records disclosed a small number of measles admissions beginning in early December and a subsequent sharp increase in admissions for measles complications beginning the second week of January.

A measles vaccination program had begun in early December, but only 3,500 (32%) of the estimated 11,000 children in the 9-month to 5-year range had been immunized before the outbreak. Subsequently, during an intensified campaign, 9,000 additional doses were administered to children from 6 months through 5 years of age.

A total of 584 children with measles were hospitalized between December 1 and February 5, most in a 100-bed ward reserved for measles patients; 68.4% were  $\leq 5$  years old. Complications in these patients included pneumonia (73.1%), diarrhea (48.0%), bloody diarrhea (13.4%), dehydration (20.9%), and otitis media (16.0%). Nine (75%) of the 12 measles deaths were associated with severe pneumonia; the others were associated with encephalitis, dehydration, and exfoliative dermatitis. Nine of the deaths were in children  $\leq 5$  years of age.

Measles vaccination histories were obtained for 178 patients; of these, 13 (7.3%) had been vaccinated more than 14 days before onset of illness. An additional 15 (8.4%) had been vaccinated during the incubation period of their illness, that is, less than 14 days before onset of illness.

Two weeks after the vaccination campaign was completed, the number of measles cases requiring admission had fallen to a level low enough to permit the closing of the measles ward.

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**Editorial Note:** Measles morbidity and mortality are high among malnourished children (2). The safety and efficacy of measles vaccine in malnourished children has been demonstrated (3). Among refugees, where crowding is associated with increased opportunity for large measles outbreaks and malnutrition, measles vaccine should be an integral (and early) aspect of relief and rehabilitation efforts. Measles vaccination coverage and effectiveness should be assessed as part of routine surveillance of refugees.

#### References

1. MMWR 1979;28:569-70.

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*Measles — Continued*

2. deVille de Goyet C, Seaman J, Geijer U. The management of nutritional emergencies in large populations. Geneva: World Health Organization, 1978.
3. McMurray DN, Loomis SA, Casazza LJ, Rey H. Influence of moderate malnutrition on morbidity and antibody response following vaccination with live, attenuated measles virus vaccine. Bull Pan Am Health Organ 1979;13:52-7.

*Epidemiologic Notes and Reports***Fluoride Intoxication in a Dialysis Unit — Maryland**

On November 13, 1979, 2 days after an unreported spill of hydrofluosilicic acid into the Annapolis public water supply, 8 patients undergoing renal dialysis became ill; 1 patient died. Water used to mix dialysate in this unit was treated only by a softening device; no reverse osmosis or deionization—2 processes that purify water—occurred. The afebrile illness, predominantly characterized by hypotension, nausea, substernal pain, diarrhea, itching, and vomiting (Table 1), developed after 1 to 2 hours of dialysis.

One patient, a 36-year-old man, was offered hospitalization when he experienced nausea, vomiting, diarrhea, chest pressure, dyspnea, and a drop in blood pressure 20 to 30 mm Hg below normal. After he was taken off dialysis, he felt slightly better and re-fused hospitalization. Twelve hours after onset, the dyspnea worsened, and while the patient was being transported by ambulance to a local hospital he had a cardiorespiratory arrest. He was successfully resuscitated.

When this patient was admitted, the dialysis unit director notified the state health department and began calling the other 7 dialysis patients. A call was made to a 65-year-old patient who had had nausea and vomited blood-tinged material 1 hour and 40 minutes after dialysis. He subsequently had watery diarrhea, headache, diaphoresis, chest pain, extreme shakiness, and weakness. Dialysis had been terminated after 3 hours. He, too, had refused hospitalization and was taken home, where he remained in bed. When the director called, this patient's wife tried to wake him, but could not. He was pronounced dead on November 14, approximately 16 hours after the onset of his illness. On autopsy

**TABLE 1. Signs and symptoms of fluoride overexposure in a dialysis unit, Annapolis, Maryland, November 13, 1979**

<u>Signs/Symptoms</u>	<u>Number</u>
Nausea	8
Hypotension	6
Substernal pain or pressure	6
Diarrhea	5
Itching	5
Vomiting	5
Malaise	5
Dyspnea	2
Flushing	2
Localized numbness	2
Diaphoresis	2
Headache	2

*Fluoride Intoxication — Continued*

he was found to have severe hypertensive and arteriosclerotic heart disease, and high fluoride levels were found in the autopsied lung (5.6 ppm), kidney (7.0 ppm), brain (0.9 ppm), and blood (4.9 ppm).

Some hours after completion of dialysis, 4 other patients were hospitalized for observation. Serum fluoride levels obtained 16 to 20 hours after the completion of dialysis in these individuals ranged from 0.4 to 5.5 ppm. Normal values immediately after dialysis for patients with chronic renal failure dialyzed with water containing 1 ppm fluoride may reach levels of 0.88 ppm (1).

A sample of "softened" water used for dialysis on November 13 contained 50 ppm fluoride. A sample of dialysate fluid taken from the dialysis bath of the machine belonging to the first patient described above contained 35 ppm fluoride.

Subsequent investigation by the Maryland State Department of Health and Mental Hygiene revealed that on November 11, 1979, a technician at the Annapolis water treatment plant had failed to close a valve to stop the flow of 22% hydrofluosilicic acid from a 4,000-gallon storage tank to a 50-gallon fluoride feed container. One thousand gallons of the acid overflowed into drains leading to sand-filter-backwash and sludge-decant tanks from which decanted liquid was recycled as raw water. The accident had not been reported to the health officials. Daily water samples were routinely tested for fluoride level by the treatment plant personnel using a colorimetric dye method capable of measuring up to 1.6 ppm (2); during the 2 days following the accident, fluoride levels were at least 1.6 ppm. On November 14, through serial dilutions made with commercial distilled water, a water sample was measured at 7.5 ppm fluoride.

An Annapolis soda-bottling company allowed health authorities to analyze soda bottled the week after the accident. The highest fluoride level was 30 ppm for soda bottled on November 14. By November 17, the fluoride content was less than 1 ppm. (All remaining bottles or cans with levels greater than 5 ppm were recalled or not distributed).

Studies were conducted to determine if overfluoridation of the city water supply was associated with acute illnesses resembling fluoride intoxication in the community at large. A case of possible fluoride intoxication was defined as any person with an afebrile illness characterized by nausea/vomiting and/or abdominal cramping (3). Review of records of emergency-room visits at the 1 large, acute-care hospital servicing Annapolis did not show an increase in cases compared to the week before the accident. There was also no increase in cases at a large Annapolis pediatric practice or at a prison dispensary located near the water treatment plant. School absenteeism throughout Annapolis did not increase in the 2 weeks following overfluoridation. A review of admissions to the hospital intensive and cardiac-care units also did not reveal any increase.

Fifty-eight persons working in the building where the dialysis unit was located completed investigation questionnaires. Thirteen had mild illness compatible with fluoride intoxication during the week following the fluoride accident, compared with 3 during the week preceding the accident (November 5) and 6 during the week beginning November 19. None of the 13 ill workers consulted a physician; 1 person missed 1 day of work. Thus, there was suggestive evidence of mild fluoride intoxication among the office workers.

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## Fluoride Intoxication — Continued

**Editorial Note:** This is the first instance of fluoride overexposure known to have caused serious illness in the 35 years since fluoridation of community water supplies was begun. There have been 5 previous accidents, all caused by equipment malfunctions.

The severe illness in the incident reported here was limited to a group of persons with end-stage renal disease who were undergoing dialysis and who received, intravenously, excessive amounts of fluoride.

In this instance, the water-treatment plant had cross-connections which allowed a spilled chemical to enter the drinking water supply. Since water treatment plants have numerous other chemicals on site—many of which would be toxic in high doses—the Annapolis incident illustrates the need for existing plants to be inspected for such cross-connections. The incident also points out that fluoride levels should be monitored by methods capable of determining actual fluoride levels, without the necessity for serial dilutions. When a chemical accident does occur, appropriate public health officials should be immediately informed so that dialysis units and End-Stage Renal Disease Networks, in particular, can be promptly notified. Finally, it is recommended that persons responsible for dialysis patients use water-purification techniques such as reverse osmosis and deionization as aids to ensure high-quality dialysate.

## References

1. Dr. Leon Singer, Professor of Biochemistry, University of Minnesota. personal communication.
2. Bellack E. Fluoridation engineering manual. Washington, DC: Environmental Protection Agency, 1974. (EPA publication no. (EPA-520/9-74-022).
3. Roholm K. Fluorine intoxication: a clinical hygienic study. London: HK Lewis, 1937.

**TABLE I. Summary — cases of specified notifiable diseases, United States**  
[Cumulative totals include revised and delayed reports through previous weeks.]

DISEASE	12th WEEK ENDING		MEDIAN 1976-1978	CUMULATIVE, FIRST 12 WEEKS		
	March 22, 1980	March 24, 1978*		March 22, 1980	March 24, 1978*	MEDIAN 1975-1978
Aseptic meningitis	38	53	28	724	591	437
Brucellosis	4	4	3	41	19	39
Chickenpox	6,454	8,698	6,716	61,771	74,795	68,265
Diphtheria	—	—	4	1	2	21
Encephalitis: Primary (arthropod-borne & unsp.)	12	8	10	142	108	140
Post-infectious	2	4	4	32	44	44
Hepatitis, Viral: Type B	316	307	306	3,601	3,083	3,295
Type A	463	608	623	6,077	6,859	7,695
Type unspecified	284	238	169	2,610	2,391	1,561
Malaria	30	7	9	289	90	67
Measles (rubella)	609	518	1,121	2,670	3,501	6,025
Meningococcal infections: Total	63	89	59	748	827	549
Civilian	62	88	58	743	822	547
Military	1	1	1	5	5	5
Mumps	281	595	602	3,356	4,505	7,123
Pertussis	20	32	28	237	334	277
Rubella (German measles)	111	529	547	1,087	3,127	3,644
Tetanus	1	—	1	8	6	9
Tuberculosis	501	565	607	5,637	5,996	6,559
Tularemia	2	—	1	21	25	17
Typhoid fever	8	12	8	62	89	82
Typhus fever, tick-borne (Riky. Mt. spotted)	—	2	—	8	16	11
Veneral diseases:						
Gonorrhoea: Civilian	16,178	17,962	17,876	215,662	218,967	215,867
Military	472	661	454	6,416	6,596	6,596
Syphilis, primary & secondary: Civilian	455	477	477	6,057	5,616	5,616
Military	5	5	6	91	69	73
Rabies in animals	118	82	51	1,079	722	542

**TABLE II. Notifiable diseases of low frequency, United States**

	CUM. 1980		CUM. 1980
Anthrax	—	Poliomyelitis: Total	1
Botulism †	9	Paralytic	1
Congenital rubella syndrome † (Mich. 1)	22	Psittacosis † (W. Va. 1)	16
Leprosy (Kans. 1, Calif. 1)	34	Rabies in man	—
Leptospirosis (Tex. 1, Calif. 1)	12	Trichinosis (Tex. 1)	10
Plague	—	Typhus fever, flea-borne (endemic, murine)	5

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

† Delayed reports: Botulism: Kans. +1 (1979); Cong. rubella syndrome: N. Dak. +2 (1979), Kans. +1 (1979), Calif. -1 (1979); Psittacosis: Calif. +1 (1979)

TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 22, 1980, and March 24, 1979 (12th week)

REPORTING AREA	ASEPTIC MENINGITIS		BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
							Primary		Post-infectious	8	A	Unspecified		
	1980	1980	1980	1980	CUM. 1980	1980	1979*	1980	1980	1980	1980	1980	1980	CUM. 1980
UNITED STATES	38	4	6,454	-	1	12	8	2	316	463	284	30	289	
NEW ENGLAND	-	1	554	-	-	3	-	-	5	13	8	4	23	
Maine	-	-	94	-	-	-	-	-	-	-	-	-	3	
N.H.†	-	-	54	-	-	-	-	-	-	2	-	1	2	
Vt.	-	-	40	-	-	-	-	-	-	-	-	-	-	
Mass.	-	-	97	-	-	-	-	-	-	2	7	3	14	
R.I.	-	-	64	-	-	-	-	-	1	2	-	-	1	
Conn.	-	1	205	-	-	3	-	-	4	7	1	-	3	
MID. ATLANTIC	6	-	544	-	1	2	-	-	56	44	19	1	48	
Upstate N.Y.	2	-	133	-	-	-	-	-	12	13	11	1	5	
N.Y. City	-	-	145	-	1	1	-	-	19	12	3	-	22	
N.J.	1	-	NN	-	-	1	-	-	7	8	5	-	15	
Pa.	3	-	266	-	-	-	-	-	18	11	-	-	6	
E.N. CENTRAL	1	-	2,725	-	-	2	-	-	36	58	23	5	10	
Ohio†	-	-	55	-	-	2	2	-	3	16	7	-	2	
Ind.†	-	-	307	-	-	-	-	-	7	4	6	-	-	
Ill.	-	-	908	-	-	-	-	-	7	19	1	1	2	
Mich.	1	-	870	-	-	2	-	-	13	15	7	2	3	
Wis.†	-	-	585	-	-	-	-	-	6	4	2	2	3	
W.N. CENTRAL	1	1	911	-	-	2	-	-	9	17	5	1	8	
Minn.	-	-	1	-	-	-	-	-	2	4	1	-	5	
Iowa	-	-	321	-	-	-	-	-	3	-	1	-	2	
Mo.	-	-	77	-	-	-	-	-	3	5	3	-	-	
N. Dak.	-	-	3	-	-	-	-	-	-	-	-	-	-	
S. Dak.	-	-	6	-	-	-	-	-	-	3	-	-	-	
Nebr.	-	-	94	-	-	2	-	-	-	1	-	-	-	
Kans.	1	1	409	-	-	-	-	-	1	4	-	1	1	
S. ATLANTIC	7	1	633	-	-	1	4	2	81	60	36	1	30	
Del.	-	-	11	-	-	-	-	-	3	-	-	-	-	
Md.	1	-	65	-	-	-	-	-	5	4	6	-	5	
D.C.	-	-	4	-	-	-	-	-	1	-	-	-	1	
Va.†	-	-	11	-	-	1	-	1	12	5	6	1	11	
W. Va.	1	1	116	-	-	-	-	-	2	1	1	-	3	
N.C.	1	-	NN	-	-	-	-	-	15	8	14	-	2	
S.C.	-	-	8	-	-	-	3	-	3	-	-	-	2	
Ga.	-	-	2	-	-	-	-	-	17	21	-	-	2	
Fla.	4	-	416	-	-	-	-	1	25	20	9	-	5	
E.S. CENTRAL	1	1	195	-	-	-	-	-	24	29	6	2	4	
Ky.	-	-	138	-	-	-	-	-	4	7	1	-	2	
Tenn.	1	-	NN	-	-	-	-	-	15	14	2	-	-	
Ala.	-	1	40	-	-	-	-	-	3	3	3	2	2	
Miss.	-	-	17	-	-	-	-	-	2	5	-	-	-	
W.S. CENTRAL	7	-	430	-	-	1	-	-	33	91	104	4	29	
Ark.†	-	-	3	-	-	-	-	-	5	6	1	-	1	
La.	-	-	NN	-	-	1	-	-	8	31	8	-	14	
Okla.	1	-	-	-	-	-	-	-	7	10	5	-	6	
Tex.	6	-	427	-	-	-	-	-	13	44	90	4	8	
MOUNTAIN	-	-	110	-	-	-	-	-	12	48	36	3	12	
Mont.†	-	-	26	-	-	-	-	-	-	1	-	-	-	
Idaho	-	-	1	-	-	-	-	-	1	4	-	-	-	
Wyo.	-	-	1	-	-	-	-	-	-	-	-	-	1	
Colo.†	-	-	62	-	-	-	-	-	-	14	2	-	4	
N. Mex.†	-	-	-	-	-	-	-	-	-	-	1	-	-	
Ariz.†	-	-	NN	-	-	-	-	-	5	16	23	3	6	
Utah	-	-	19	-	-	-	-	-	4	2	3	-	-	
Nev.	-	-	1	-	-	-	-	-	2	11	7	-	1	
PACIFIC	15	-	352	-	-	1	2	-	60	103	47	9	125	
Wash.	-	-	311	-	-	-	1	-	7	7	7	-	12	
Oreg.	-	-	-	-	-	-	-	-	8	8	-	-	9	
Calif.†	9	-	-	-	-	1	1	-	43	87	39	9	103	
Alaska	2	-	15	-	-	-	-	-	1	1	1	-	1	
Hawaii	4	-	26	-	-	-	-	-	1	-	-	-	-	
Guam †	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-	
P.R.	1	-	10	-	-	-	-	-	5	4	2	-	-	
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	
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: Chickenpox: Calif. +97, Guam +2; Enceph., prim.: Ind. +1; Enceph., post: N.H. +1, Ind. +1; Hep.B: Mont. +3, Colo. +3; Hep.A: N.H. +1, Ind. -1, Wis. -1, Va. -1, Ark. +1, Colo. +8, Guam +1; Hep. unsp.: N.H. +1, Va. -2, Ark. -1; Malaria: Ohio +1, N.Mex. +1, Ariz. -1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 22, 1980, and March 24, 1979 (12th week)

REPORTING AREA	MEASLES (RUBEDLA)			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	609	2,670	3,501	63	748	827	281	3,356	20	111	1,087	8
NEW ENGLAND	33	239	110	7	37	24	13	299	-	14	71	-
Maine	3	4	4	1	2	1	11	107	-	10	28	-
N.H.†	8	120	3	-	3	3	-	6	-	1	18	-
Vt.	21	111	3	1	2	1	-	-	-	-	-	-
Mass.	-	-	-	1	14	9	2	98	-	1	16	-
R.I.	-	2	100	1	3	-	-	11	-	-	-	-
Conn.	1	2	-	3	13	10	-	77	-	2	9	-
MID. ATLANTIC	115	559	227	13	127	116	93	451	1	8	80	1
Upstate N.Y.	51	168	112	2	48	42	3	31	1	3	40	-
N.Y. City	38	163	86	5	41	30	-	24	-	5	23	-
N.J.	-	74	21	3	24	34	1	52	-	-	13	-
Pa.†	26	154	8	3	14	10	89	344	-	-	4	1
E.N. CENTRAL	67	325	860	2	78	81	76	1,192	1	17	267	-
Ohio†	-	52	4	-	26	27	21	523	-	-	1	-
Ind.	3	19	68	-	12	20	1	40	-	10	98	-
Ill.	14	74	322	-	11	3	13	138	-	-	53	-
Mich.	21	91	304	1	22	24	36	359	1	5	75	-
Wis.	29	89	162	1	7	7	5	132	-	2	40	-
W.N. CENTRAL	80	358	332	4	29	32	11	116	11	15	100	2
Minn.	36	229	135	-	9	4	1	4	1	-	7	1
Iowa†	-	1	2	-	3	4	-	13	-	2	3	-
Mo.	13	47	183	1	9	19	-	46	-	2	23	-
N. Dak.	-	-	3	-	1	1	-	3	-	-	3	-
S. Dak.	-	-	1	-	2	2	1	1	-	-	-	-
Nebr.	21	33	-	-	-	-	-	8	-	-	-	-
Kans.	10	48	8	3	5	2	9	41	10	11	64	1
S. ATLANTIC	243	683	503	10	178	211	44	355	4	11	108	2
Del.†	-	1	-	-	1	2	-	26	-	-	-	-
Md.	9	19	5	3	16	10	30	113	-	-	-	-
D.C.	-	-	-	-	-	-	-	2	-	-	-	-
Va.†	36	133	57	-	15	33	4	29	-	3	6	1
W. Va.†	2	8	32	2	5	3	3	63	-	1	8	-
N.C.	3	37	60	1	34	32	2	55	-	2	28	-
S.C.	91	91	59	-	22	30	1	12	-	-	37	1
Ga.	87	278	33	3	41	33	-	-	4	-	-	-
Fla.	15	116	257	1	44	68	4	55	-	5	29	-
E.S. CENTRAL	5	98	50	10	78	59	10	552	-	7	41	-
Ky.	1	30	11	3	22	12	5	516	-	5	19	-
Tenn.	1	7	7	1	18	16	1	14	-	1	20	-
Ala.	3	15	24	5	23	16	3	7	-	1	2	-
Miss.	-	46	6	1	15	15	1	15	-	-	-	-
W.S. CENTRAL	20	156	397	9	85	144	8	96	2	2	34	-
Ark.	-	1	6	1	4	12	1	13	-	-	1	-
La.	-	5	95	-	26	67	2	18	-	1	3	-
Okla.†	19	84	3	-	6	16	-	-	2	-	-	-
Tex.	1	66	293	8	49	49	5	65	-	1	30	-
MOUNTAIN	13	59	67	-	24	36	11	88	1	3	29	-
Mont.†	-	1	18	-	1	2	-	24	-	-	1	-
Idaho†	-	-	2	-	3	3	1	7	-	-	2	-
Wyo.	-	-	-	-	1	-	-	-	-	-	-	-
Colo.†	-	2	6	-	8	1	1	19	1	-	1	-
N. Mex.†	-	-	10	-	-	2	-	-	-	-	-	-
Ariz.†	11	25	15	-	5	24	1	12	-	1	9	-
Utah	2	29	13	-	1	3	7	22	-	2	13	-
Nev.	-	2	3	-	5	1	1	4	-	-	3	-
PACIFIC	33	193	955	8	112	124	15	207	-	34	357	3
Wash.	19	59	458	1	18	16	8	69	-	1	19	-
Oreg.	-	-	8	4	22	10	2	31	-	8	28	-
Calif.	14	128	433	3	71	93	5	102	-	25	309	3
Alaska	-	3	14	-	1	1	-	3	-	-	1	-
Hawaii	-	3	42	-	-	4	-	2	-	-	-	-
Guam†	NA	-	-	-	-	-	NA	3	NA	NA	-	-
P.R.	3	21	105	-	5	-	2	32	-	-	2	3
V.I.	-	4	1	1	1	2	-	1	-	-	-	-
Pac. Trust Terr.	NA	3	5	-	-	1	NA	1	NA	NA	1	-

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. +5, Pa. -3, Iowa -1, Va. -1, Okla. +11, Colo. +1, N.Mex. +1, Guam +1; Men. inf.: N.H. +1, Ohio +5, N.Mex. +5, Ariz. -1; Mumps: N.H. +2, Dela. +2, W.Va. -23, Mont. +7; Rubella: Idaho +5, N.Mex. +3.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 22, 1980, and March 24, 1979 (12th week)

REPORTING AREA	TUBERCULOSIS		TULA-REMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
	1980	CUM. 1980	CUM. 1980	1980	CUM. 1980	1980	CUM. 1980	GONORRHEA			SYPHILIS (Pri. & Sec.)			CUM. 1980
								1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	CUM. 1979*	
UNITED STATES	501	5,637	21	8	62	-	8	16,178	215,662	218,967	455	6,057	5,616	1,079
NEW ENGLAND	16	173	-	-	5	-	-	404	5,681	5,807	9	186	102	12
Maine	3	12	-	-	-	-	-	12	348	367	-	-	1	11
N.H.	-	2	-	-	-	-	-	29	204	186	-	-	5	-
Vt.	-	7	-	-	-	-	-	11	141	98	-	1	-	-
Mass.	8	81	-	-	3	-	-	184	2,274	2,316	9	119	66	1
R.I.	3	23	-	-	1	-	-	31	332	472	-	6	3	-
Conn.	2	48	-	-	1	-	-	137	2,362	2,368	-	60	27	-
MID. ATLANTIC	90	1,053	1	5	14	-	1	2,051	24,357	22,740	69	852	891	2
Upstate N.Y.†	11	205	-	1	1	-	-	631	4,175	3,256	4	64	70	-
N.Y. City	36	383	1	1	6	-	-	900	8,837	8,594	36	554	602	-
N.J.	20	226	-	-	3	-	-	102	4,318	4,472	12	113	109	2
Pa.	23	239	-	3	4	-	1	418	6,027	6,418	17	121	110	-
E.N. CENTRAL	102	775	1	-	6	-	-	2,538	32,722	34,051	54	550	739	124
Ohio†	10	131	-	-	-	-	-	917	9,678	9,075	13	98	157	2
Ind.†	20	102	-	-	-	-	-	164	3,577	2,737	-	60	43	11
Ill.†	28	292	-	-	3	-	-	595	8,350	11,175	27	197	431	77
Mich.	37	195	1	-	3	-	-	608	7,703	7,946	12	170	83	-
Wis.†	7	55	-	-	-	-	-	254	3,414	3,118	2	25	25	34
W.N. CENTRAL	17	174	8	-	1	-	2	875	9,828	10,472	6	66	68	296
Minn.	4	30	1	-	-	-	-	76	1,736	1,877	1	24	21	36
Iowa	1	12	4	-	-	-	-	67	1,074	1,370	-	3	7	67
Mo.	10	83	2	-	-	-	2	500	4,131	4,330	5	36	26	75
N. Dak.	-	6	-	-	-	-	-	15	136	173	-	-	-	25
S. Dak.	1	8	-	-	1	-	-	19	307	349	-	-	-	65
Nebr.	-	7	1	-	-	-	-	78	831	671	-	2	1	3
Kans.	1	28	-	-	-	-	-	120	1,613	1,702	-	1	13	25
S. ATLANTIC	96	1,275	6	-	14	-	4	4,156	52,997	52,101	114	1,474	1,425	94
Del.	-	20	-	-	1	-	-	53	783	835	-	5	9	-
Md.	12	151	1	-	2	-	-	337	5,326	6,439	6	111	97	-
D.C.	5	71	-	-	3	-	-	312	3,973	3,260	17	103	100	-
Va.	8	148	-	-	2	-	-	440	4,444	4,489	5	124	147	-
W. Va.	4	53	-	-	1	-	-	53	645	759	-	4	21	2
N.C.†	26	237	2	-	1	-	2	647	8,409	8,223	10	113	133	-
S.C.	13	106	-	-	1	-	-	403	4,983	4,286	3	77	76	16
Ga.†	-	151	3	-	-	-	2	788	9,533	9,843	32	426	379	53
Fla.	28	338	-	-	3	-	-	1,123	14,901	13,567	41	511	463	23
E.S. CENTRAL	42	525	1	-	2	-	-	1,583	17,950	18,986	29	487	400	54
Ky.	5	107	-	-	1	-	-	213	2,566	2,618	1	28	41	30
Tenn.	18	176	1	-	-	-	-	671	6,516	6,691	7	201	167	21
Ala.	7	153	-	-	1	-	-	446	5,061	5,596	14	101	80	3
Miss.	12	89	-	-	-	-	-	253	3,807	4,081	7	157	112	-
W.S. CENTRAL	56	494	-	-	1	-	1	1,703	28,023	29,248	107	1,168	961	332
Ark.	5	40	-	-	-	-	-	144	2,099	2,314	4	44	32	41
La.†	11	110	-	-	-	-	-	239	4,408	5,127	13	271	218	4
Okla.	4	54	-	-	-	-	-	188	2,781	2,544	-	16	15	47
Tex.	36	290	-	-	1	-	1	1,132	18,735	19,263	90	837	696	240
MOUNTAIN	14	161	2	1	4	-	-	729	8,363	8,472	9	136	71	25
Mont.†	-	9	-	-	1	-	-	12	289	480	-	-	4	3
Idaho	3	7	1	-	-	-	-	49	438	388	-	8	6	-
Wyo.	-	9	-	-	-	-	-	21	247	212	3	7	3	-
Colo.	-	16	-	-	1	-	-	188	2,128	2,308	2	38	27	-
N. Mex.†	4	31	-	-	-	-	-	45	1,135	1,055	-	23	10	5
Ariz.	6	73	1	-	1	-	-	209	2,270	2,293	-	40	11	17
Utah	-	5	-	1	1	-	-	36	407	409	-	4	1	-
Nev.	1	11	-	-	-	-	-	169	1,449	1,327	4	16	9	-
PACIFIC	68	1,007	2	2	15	-	-	2,139	35,741	37,090	58	1,138	959	140
Wash.	7	85	-	-	-	-	-	262	3,049	2,837	-	92	60	-
Oreg.	4	49	-	-	-	-	-	314	2,622	2,457	4	27	47	-
Calif.	57	852	2	2	15	-	-	1,448	28,722	30,004	51	999	829	104
Alaska	-	7	-	-	-	-	-	83	866	1,208	-	2	3	36
Hawaii	-	14	-	-	-	-	-	32	482	584	3	18	20	-
Guam †	NA	2	-	NA	-	NA	-	NA	12	23	NA	-	-	-
P.R.	1	28	-	-	-	-	-	92	595	435	21	136	136	13
V.I.	-	-	-	-	-	-	-	1	40	38	1	7	-	-
Pac. Trust Terr.	NA	7	-	NA	-	NA	-	NA	94	102	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: Wis. -1, N.C. -5, Guam +2; Typhoid fever: Ups. N.Y. +3, N.Mex. +1; RMSF: Ga. -2; GC: Ill. +2666, Wis. +234, La. +2, Mont. +13, Guam +4 civ. +2 mil.; Syphilis: Ohio -1, Ill. +107, Wis. +4; An. rabies: Ohio +5, Ind. +2.

TABLE IV. Deaths in 121 U.S. cities,\* week ending  
March 22, 1980 (12th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL	REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL
	ALL AGES	>65	45-64	25-44	<1			ALL AGES	>65	45-64	25-44	<1	
<b>NEW ENGLAND</b>	726	500	167	20	16	73	<b>S. ATLANTIC</b>	1,254	809	295	73	36	71
Boston, Mass.	194	111	59	6	8	23	Atlanta, Ga.	159	101	37	15	3	7
Bridgeport, Conn.	39	25	11	3	—	4	Baltimore, Md.	161	111	35	6	5	9
Cambridge, Mass.	17	11	4	1	—	—	Charlotte, N.C.	71	45	15	4	3	1
Fall River, Mass.	26	23	2	1	—	2	Jacksonville, Fla.	124	79	31	8	4	6
Hartford, Conn.	71	51	13	3	1	3	Miami, Fla.	104	56	35	8	1	3
Lowell, Mass.	36	24	11	1	—	3	Norfolk, Va.	73	53	12	2	2	6
Lynn, Mass.	25	19	5	—	1	3	Richmond, Va.	104	59	32	7	4	8
New Bedford, Mass.	35	28	7	—	—	6	Savannah, Ga.	54	37	13	2	2	4
New Haven, Conn.	22	13	3	2	1	2	St. Petersburg, Fla.	93	78	11	—	—	8
Providence, R.I.	72	53	16	—	2	7	Tampa, Fla.	78	53	18	3	2	8
Somerville, Mass.	15	13	2	—	—	3	Washington, D.C.	179	103	45	13	8	8
Springfield, Mass.	59	41	14	1	1	2	Wilmington, Del.	54	34	11	5	2	3
Waterbury, Conn.	45	33	10	2	—	5							
Worcester, Mass.	70	55	10	—	2	10							
							<b>E.S. CENTRAL</b>	794	470	190	52	49	36
<b>MID. ATLANTIC</b>	2,613	1,725	604	167	55	139	Birmingham, Ala.	125	74	32	9	7	3
Albany, N.Y.	44	26	13	3	1	—	Chattanooga, Tenn.	63	42	14	3	—	5
Allentown, Pa.	27	21	3	3	—	2	Knoxville, Tenn.	50	34	9	4	—	3
Buffalo, N.Y.	115	78	29	6	1	10	Louisville, Ky.	128	82	35	1	4	17
Camden, N.J.	56	35	16	3	1	5	Memphis, Tenn.	189	96	42	13	29	—
Elizabeth, N.J.	37	29	5	2	—	1	Mobile, Ala.	62	35	15	9	2	—
Erie, Pa.†	36	26	6	3	1	5	Montgomery, Ala.	32	20	9	2	1	—
Jersey City, N.J.	102	60	31	7	2	—	Nashville, Tenn.	145	87	34	11	6	8
Newark, N.J.	67	28	27	5	4	8							
N.Y. City, N.Y.	1,433	951	321	98	27	63	<b>W.S. CENTRAL</b>	1,523	829	400	128	78	55
Paterson, N.J.	23	19	4	—	—	1	Austin, Tex.	52	40	6	4	—	3
Philadelphia, Pa.†	163	93	45	10	7	10	Baton Rouge, La.	71	38	22	2	3	4
Pittsburgh, Pa.†	64	43	14	5	1	—	Corpus Christi, Tex.	42	21	16	1	2	2
Reading, Pa.	49	35	8	2	2	4	Dallas, Tex.	200	106	50	14	20	4
Rochester, N.Y.	128	92	26	6	3	12	El Paso, Tex.	52	28	16	5	—	6
Schenectady, N.Y.	30	23	7	—	—	—	Fort Worth, Tex.	90	53	25	5	4	11
Scranton, Pa.†	25	15	10	—	—	2	Houston, Tex.	530	249	147	67	28	7
Syracuse, N.Y.	107	69	22	8	4	7	Little Rock, Ark.	73	43	19	5	5	8
Trenton, N.J.	40	29	8	2	—	—	New Orleans, La.	74	40	17	6	2	—
Utica, N.Y.	24	16	5	2	1	6	San Antonio, Tex.	196	124	49	9	7	5
Yonkers, N.Y.	43	37	4	2	—	3	Shreveport, La.	57	29	18	5	2	2
							Tulsa, Okla.	86	58	15	5	5	3
<b>E.N. CENTRAL</b>	2,545	1,594	603	172	84	109	<b>MOUNTAIN</b>	574	347	131	41	22	18
Akron, Ohio	77	53	12	5	2	—	Albuquerque, N. Mex.	56	35	15	1	—	4
Canton, Ohio	34	24	6	2	—	1	Colo. Springs, Colo.	27	25	1	1	—	1
Chicago, Ill.	591	352	146	48	28	25	Denver, Colo.	105	61	22	10	6	4
Cincinnati, Ohio	172	111	40	8	5	17	Las Vegas, Nev.	73	35	22	6	1	3
Cleveland, Ohio	196	114	57	15	4	7	Ogden, Utah	18	13	1	1	1	—
Columbus, Ohio	138	91	29	8	2	10	Phoenix, Ariz.	125	72	26	11	9	4
Dayton, Ohio	112	75	28	6	1	3	Pueblo, Colo.	24	16	5	3	—	2
Detroit, Mich.	308	168	88	26	11	7	Salt Lake City, Utah	44	24	11	4	3	—
Evansville, Ind.	65	43	16	2	2	5	Tucson, Ariz.	102	66	28	4	2	—
Fort Wayne, Ind.	66	39	17	5	4	3							
Gary, Ind.	22	13	4	3	—	2							
Grand Rapids, Mich.	73	50	12	9	2	6	<b>PACIFIC</b>	1,765	1,120	414	115	55	63
Indianapolis, Ind.	174	107	38	15	7	2	Berkeley, Calif.	18	12	4	1	1	1
Madison, Wis.	29	12	10	2	2	5	Fresno, Calif.	77	45	22	5	3	4
Milwaukee, Wis.	153	111	31	4	1	4	Glendale, Calif.	33	26	5	1	—	2
Peoria, Ill.	53	33	13	3	2	—	Honolulu, Hawaii	56	31	18	4	2	2
Rockford, Ill.	33	25	5	1	1	2	Long Beach, Calif.	84	60	14	4	6	4
South Bend, Ind.	44	29	12	—	2	6	Los Angeles, Calif.	505	310	113	40	13	18
Toledo, Ohio	140	99	24	8	4	3	Oakland, Calif.	85	56	17	5	3	4
Youngstown, Ohio	65	45	15	2	—	1	Pasadena, Calif.	32	26	3	3	—	1
							Portland, Ore.	140	94	28	6	8	1
<b>W.N. CENTRAL</b>	828	572	156	33	32	46	Sacramento, Calif.	68	44	15	4	4	2
Des Moines, Iowa	74	51	15	1	3	4	San Diego, Calif.	137	76	46	9	3	1
Duluth, Minn.	22	17	1	1	2	3	San Francisco, Calif.	158	91	47	14	4	6
Kansas City, Kans.	44	27	9	3	2	7	San Jose, Calif.	161	99	44	8	5	3
Kansas City, Mo.	111	76	24	4	3	1	Seattle, Wash.	142	99	28	9	—	6
Lincoln, Neb.	34	24	6	3	1	1	Spokane, Wash.	32	21	6	—	2	3
Minneapolis, Minn.	113	74	20	5	3	2	Tacoma, Wash.	37	30	4	2	1	3
Omaha, Neb.	100	70	18	5	3	2							
St. Louis, Mo.	176	124	31	4	7	6							
St. Paul, Minn.	76	58	11	4	—	2							
Wichita, Kans.	78	51	21	3	2	12							
							<b>TOTAL</b>	12,622	7,966	2,960	801	427	610

\*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.

## Red Spots on Airline Flight Attendants

From January 1 to March 10, 1980, Eastern Airlines (EAL) received 190 reports of episodes of red spots appearing on the skin of flight attendants (FAs) during various flights. The spots were reported to be small drops of red liquid that appeared on exposed areas of the skin during the flight and disappeared shortly afterward. Complaints of symptoms accompanying the spots were rare, but some FAs expressed concern that the spots were caused by bleeding through the skin and might indicate a serious health hazard. On March 12, investigators from CDC traveled to Miami to assist in the investigation.

EAL's medical personnel had examined several persons with the spots and obtained swabs and scrapings as clinical specimens. No evidence of damage to underlying skin was noted on these examinations, nor was any noted by consultant dermatologists who examined affected FAs after the spots had disappeared. Chemical tests on clinical specimens for the presence of blood were negative. Airline personnel had investigated the ventilation systems, cleaning materials and procedures, and other environmental factors on affected aircraft. Air-flow patterns and cabin temperatures, pressures, and relative humidity were found to be normal. Cleaning materials and routines had been changed, but cases continued to occur.

Written reports by FAs of 132 cases occurring in January and February showed that 91 different FAs had been affected, 68 once and 23 several times. Of these cases, 119 (90%) had occurred on a single type of aircraft. Of the 119 cases from implicated aircraft, 96% occurred on north- or south-bound flights between the New York City and Miami metropolitan areas, flights that are partially over water. Only rarely was a case reported from the same airplanes when flying transcontinental or other east-west routes.

The investigation then concentrated on more clearly defining the clinical picture. An EAL physician, a consultant dermatologist, and a physician from the National Institute for Occupational Safety and Health (NIOSH) rode on implicated flights on March 14 and examined 3 new cases considered by the EAL physician and other FAs to be typical cases. Although the spots observed consisted of red liquid, they did not resemble blood.

To identify potential environmental sources of red-colored material, investigators observed the standard activities of FAs on board implicated flights. At the beginning of each flight FAs routinely demonstrated the use of life vests, required in emergency landings over water. Because the vests used for demonstration were not actually functional, they were marked in bright red ink with the words "Demo Only." When the vests were demonstrated, the red-ink areas came into close contact with the face, neck, and hands of the demonstrator. Noting that on some vests the red ink rubbed or flaked off easily, investigators used red material from the vests to elicit the typical clinical picture on themselves. On preliminary chemical analysis, material in clinical specimens of red spots obtained from cases was found to match red-ink specimens from demonstration vests.

On March 15 and 16, EAL removed all demonstration model life vests from all its aircraft and instructed FAs to use the standard, functional, passenger-model vests for demonstration purposes. The airline will continue to request reports of cases to verify the effectiveness of this action.

Although all demonstration vests were obtained from the same manufacturer, the vests removed from specific aircraft were noted to vary somewhat in the color of fabric and in the color and texture of red ink, suggesting that many different production lots may have been in use simultaneously on any given aircraft.

Red Sweats -- Continued

Reported by DP Millett, MD, AR Jones, BS, RB Cesta, MS, Eastern Airlines; MB Poh, MD, Columbia College of Physicians and Surgeons, New York City; Div of Surveillance, Hazard Evaluation and Field Studies, NIOSH, and Special Studies Br, Chronic Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Several factors may have accounted for the recent appearance of this problem and its occurrence on only a portion of EAL's flights over water: 1) the age of the vests, 2) variations in the ink used on specific lots, and 3) varying patterns in distributing the vests to EAL's numerous bases and aircraft.

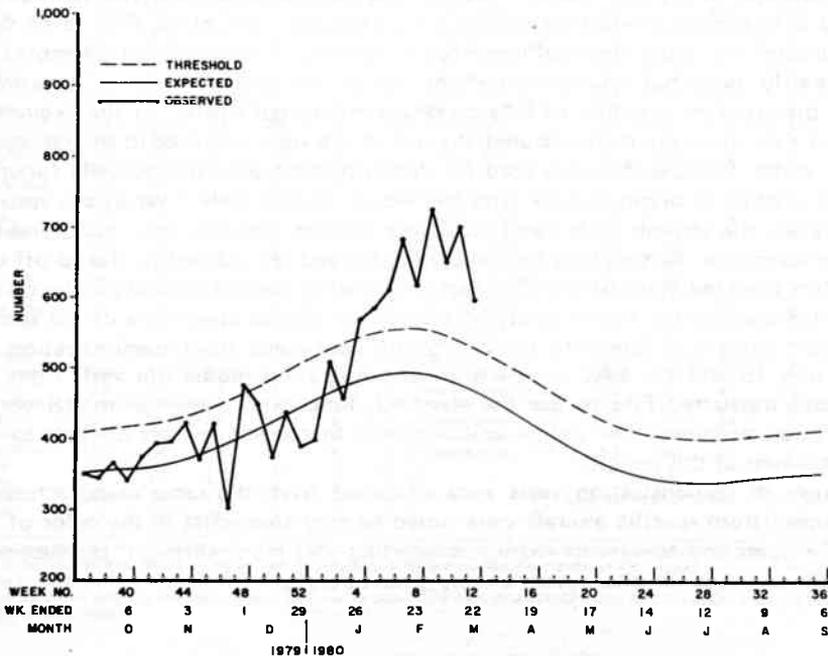
Current Trends

Influenza -- United States

For the week ending March 15, 3 states (Michigan, Nebraska, and Virginia) reported widespread outbreaks of influenza to CDC. Three states (Delaware, North Carolina, and Oregon) reported regional outbreaks, and 36 states reported sporadic influenza cases.

For the ninth consecutive week, the number of pneumonia and influenza (P&I) deaths reported from 117 U.S. cities remained above the epidemic threshold. For the week ending March 22, P&I deaths decreased from the previous week's total (Figure 1).

FIGURE 1. Observed and expected number of deaths attributed to pneumonia and influenza in 117 U.S. cities, 1979-80



*Influenza - Continued*

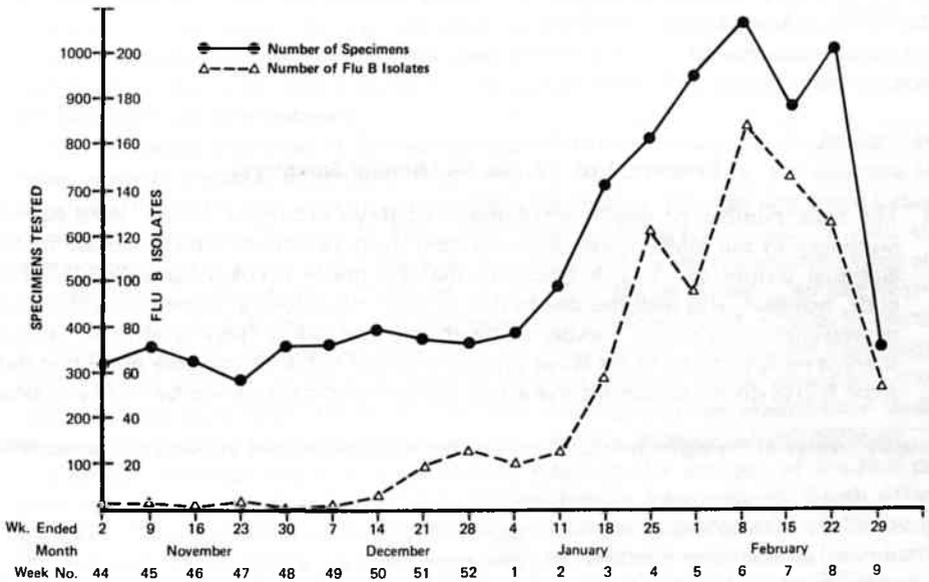
The number of influenza B virus isolations reported in the United States decreased in the weeks ending March 15, 22, and 29 (Figure 2). Since November 1979, 42 states and the District of Columbia have reported the isolation of influenza B viruses. No isolations of influenza A(H1N1) strains have been reported since February 1980 (1). New Jersey and Virginia reported sporadic isolations of A(H3N2) strains in mid-February. Eight states have now reported such isolates.

*Reported by the Immunization Div, Bur of State Services, the World Health Organization Collaborating Center for Influenza, Virology Div, Bur of Laboratories, and the Consolidated Surveillance and Communications Activity, Bur of Epidemiology, CDC.*

*Reference*

1. MMWR 1980;29:108.

**FIGURE 2. Laboratory surveillance for influenza virus infections, and virus isolations by World Health Organization Collaborating Laboratories\* in the United States, 1979-80**



\*including military sources.

The Morbidity and Mortality Weekly Report, circulation 96,486, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegrams 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.

International Notes**Quarantine Measures**

The following changes should be made in the Supplement, "Health Information for International Travel," MMWR, Vol. 28, July 1979:

**GUINEA-BISSAU**

*Yellow fever* - Africa: Delete Central African Empire. Insert Central African Republic.

*Smallpox* - Delete all information. Change note to: A certificate is required ONLY from travelers arriving from:

Africa: Ethiopia, Somalia

Asia: Bangladesh, India, Pakistan

ALSO on page 13 delete code. Insert \*.

**GUYANA**

*Yellow fever* - Africa: Delete Central African Empire. Insert Central African Republic.

*Smallpox* - Delete all information. Insert: None. ALSO on page 13 delete code. Insert: None.

**Erratum, Vol. 27, No. 54 (Annual Summary)**

**p79** The total number of deaths attributable to Reye syndrome in the 1978 Annual Summary to the MMWR was obtained from death certificate data published by the National Center for Health Statistics (NCHS) under ICDA-8 Code 347.9.\* This code, however, also includes deaths due to other neurological diseases and therefore overestimates the actual number of deaths attributable to Reye syndrome. Because there is no specific code for Reye syndrome under ICDA-8, available published data from NCHS do not document the actual number of deaths caused by this syndrome.

\*Category number of the eighth revision of the International Classification of Diseases, adapted 1965.

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