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MORBIDITY AND MORTALITY WEEKLY REPORT

Surveillance and Assessment of Alcohol-Related Mortality — United States, 1980

Reduction of morbidity and mortality associated with misuse of alcohol is a major target of the 1990 objectives for the nation (*1*). Recently available Multiple Cause of Mortality tapes from the National Center for Health Statistics (NCHS) represent a tool for more comprehensive surveillance and assessment of alcohol-related mortality (*2*). National multiple-cause data tapes for 1980 were analyzed to (1) evaluate completeness of mortality reporting by comparing counts of alcohol-related mortality recorded as the *underlying cause* with those recorded as *contributing causes* on the death certificate* and (2) estimate premature mortality resulting from alcohol misuse.

*An algorithm is used by NCHS to assign underlying and contributing causes from those causes listed on the death certificate.

TABLE 1. Number of deaths* and ratio of deaths to physicians' reports of underlying causes, by alcohol-related causes of mortality — United States, 1980

Cause of death	ICD-9-CM§	No. deaths†			Ratio of deaths to underlying causes
		Underlying cause	Contributing causes	Total	
Alcohol dependence	303	4,351	13,911	18,262	4.2
Alcoholic cirrhosis¶	571.0-571.3	12,951	2,223	15,174	1.2
Alcohol abuse**	305.0	893	3,903	4,796	5.4
Excessive blood alcohol	790.3	11	1,351	1,362	123.8
Alcoholic cardiomyopathy**	425.5	650	129	779	1.2
Alcohol psychosis	291	454	309	763	1.7
Alcohol gastritis	535.3	84	30	114	1.4
Alcohol polyneuropathy**	357.5	4	9	13	3.3

*Includes nonresident deaths.

†Because more than one condition may appear as contributing cause for any one death, the numbers in the "contributing causes" and "total" columns are not mutually exclusive.

§The International Classification of Diseases, 9th Revision, Clinical Modification.

¶Includes all types of alcoholic liver disease (i.e., fatty liver, alcoholic hepatitis, etc.).

**New diagnostic categories in ICD-9-CM.

Alcohol-Related Mortality — Continued

Alcohol-related mortality attributable to specific diagnoses has been recorded on death certificates as either the underlying or contributing cause of death (Table 1). For example, 85% of the 15,174 mentions of alcoholic cirrhosis as a cause of death in 1980 were recorded as the underlying cause of death; a similar pattern was seen with alcoholic gastritis, alcoholic cardiomyopathy, and alcoholic psychosis. In contrast, although alcohol dependence was listed as a contributing cause of alcohol-related mortality in 13,911 deaths, it was only recorded as the underlying cause of death on 4,351 death certificates, 24% of the total alcohol dependence-associated deaths.† A similar pattern was seen with the third leading cause of alcohol-related mortality, alcohol abuse, which was listed as the contributory cause in 3,903 (81%) of 4,796 deaths.

Estimates of premature mortality (*3*) associated with alcohol misuse among persons aged 1 year through 64 years are based either on underlying cause or on contributing cause (Table 2). Alcohol dependence and alcoholic cirrhosis, the two major reported causes of alcohol-related mortality, account for substantial years of potential life lost (YPLL) due to alcohol use.† When average YPLL per death is examined, however, it is apparent that deaths resulting from the acute effects of alcohol account for relatively more mortality in younger persons. For example, an average of 29.1 years of life were lost for each death associated with excessive blood alcohol levels, in contrast with 14.4 years lost for each death from alcoholic cirrhosis.

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Editorial Note: For two reasons, these data conservatively estimate total mortality and premature mortality associated with alcohol misuse. First, only causes of death presumed to

†The two patterns are not mutually exclusive. For a given death where the underlying cause is alcoholic cirrhosis, for example, alcohol dependence may be a contributing cause. While underlying causes can be added across conditions, contributing causes and total counts cannot be added.

TABLE 2. Years of potential life lost (YPLL) and average YPLL per reported death, by alcohol-related cause of mortality — United States, 1980

Cause of death	No. deaths			YPLL			Average YPLL per reported death*
	Underlying cause	Contributing causes	Total	Underlying cause	Contributing causes	Total	
Alcohol dependence	3,436	10,340	13,776	52,831	154,228	207,059	15.0
Alcoholic cirrhosis	10,159	1,435	11,594	149,605	17,183	166,788	14.4
Alcohol abuse	797	3,395	4,192	17,368	83,738	101,106	24.1
Excessive blood alcohol	11	1,262	1,273	269	36,719	36,988	29.1
Alcoholic cardiomyopathy	518	96	614	7,782	1,420	9,202	15.0
Alcohol psychosis	344	205	549	5,683	2,993	8,676	15.8
Alcoholic gastritis	69	26	95	1,249	444	1,693	17.8
Alcohol polyneuropathy	3	6	9	9	43	52	5.8

*Average YPLL equals the total YPLL divided by the reported number of persons 1 year through 64 years old who died from each cause.

Alcohol-Related Mortality — Continued

be specific for alcohol have been included, while other deaths resulting from liver disease, but not attributed specifically to alcohol misuse (e.g., other cirrhosis, ICD-9-CM 571.4-571.9), are excluded. Second, deaths from injuries (e.g., motor vehicle incidents, homicides, suicides, fires, and falls), many of which may be alcohol-related, have been excluded (*4,5*). More precise monitoring of the effectiveness of efforts to reduce morbidity and mortality associated with alcohol misuse will require more complete reporting on death certificates or alternative sources of mortality data.

References

1. U.S. Department of Health and Human Services. Promoting health/preventing disease: objectives for the nation. Washington, D.C.: U.S. Public Health Service, Department of Health and Human Services 1980:67-72.
2. National Center for Health Statistics. The international classification of diseases, 9th revision, clinical modification. Vol. 1. Diseases, tabular list. Ann Arbor, Michigan: Edwards Brothers, Inc., 1980.
3. CDC. Table V. Years of potential life lost, deaths, and death rates, by cause of death, and estimated number of physician contacts, by principal diagnosis, United States. MMWR 1985;33:27.
4. Dufour M, Malin H, Bertolucci D, Christian C. Death certification practices in alcohol-related traffic fatalities. 112th annual meeting, American Public Health Association, Anaheim, California, November 1984.
5. CDC. Alcohol and fatal injuries—Fulton County, Georgia, 1982. MMWR 1983;32:573-6.

Quarantine Measures

The following changes should be made in the "Supplement—Health Information for International Travel," *MMWR*, Vol. 33, 1984. Situation as of January 1, 1985:

ANGOLA

On page 18, insert: *Yellow Fever*—I > 1 yr. ALSO insert code I on page 11.

BANGLADESH

Yellow Fever—Change code to III on pages 11 and 20. ALSO insert * after code on page 11.

BOLIVIA

Yellow Fever—Delete all information on page 23. Insert: code II. Insert: Bolivia recommends vaccination for incoming travelers from noninfected areas. ALSO change code to II* on page 11.

BRUNEI

On pages 5, 12, 24, and 123 change name to Brunei Darussalam.

CHRISTMAS ISLAND

On page 27, *Yellow Fever*—Insert: A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 73-4). Note: Christmas Island reserves the right to isolate any person who arrives without the required certificates. Carriers are responsible for expense of isolation of all travelers arriving by air who are not in possession of the required vaccination certificates. ALSO insert * after code on page 12.

KOREA, REPUBLIC OF (South)

Delete all information on page 40. Insert: No vaccinations required. ALSO delete code on page 14.

MADAGASCAR

On page 41, insert: *Cholera*—No vaccination required. Madagascar recommends a certificate for travelers coming from or transiting infected areas. ALSO insert * on page 14.

MALDIVES

Cholera—Delete all information on page 42. ALSO delete code on page 15.

NEW CALEDONIA AND DEPENDENCIES

On page 46, insert: *Cholera*—No vaccination required. Travelers coming from infected areas

Quarantine Measures — Continued

are required to complete a form for the use of the Health Service. ALSO insert * on page 15.

Yellow Fever—Delete note. ALSO delete * on page 15.

NIGER

Cholera—Delete all information on page 46. ALSO delete code on page 15.

PANAMA

Delete all information on page 47. Insert: *Yellow Fever*—A certificate is required for all travelers going to the provinces of Bocas del Toro and Darien. ALSO insert * on page 15.

PORTUGAL

On page 49, *Yellow Fever*—Insert: No certificate is, however, required from transit passengers at Funchal, Porto Santo, and Santa Maria.

RWANDA

Yellow Fever—Change code to I > 1 yr. on page 50. Insert: Except that NO certificate is required from travelers in transit who do not leave the airport. ALSO change code to I* on page 16.

TRINIDAD AND TOBAGO

On page 55, *Yellow Fever*—Change code to II > 1 yr. ALSO change code to II on page 17.

UPPER VOLTA

On pages 4, 17, 20, 22, 30, 34, 35, 37, 56, and 125, change name to Burkina Faso.

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

Disease	12th Week Ending			Cumulative, 12th Week Ending		
	Mar. 23, 1985	Mar. 24, 1984	Median 1980-1984	Mar. 23, 1985	Mar. 24, 1984	Median 1980-1984
Acquired Immunodeficiency Syndrome (AIDS)	88	112	N	1,229	823	N
Aseptic meningitis	66	72	71	805	941	941
Encephalitis: Primary (arthropod-borne & unspec.)	22	23	22	199	175	194
Post-infectious	-	3	3	25	18	20
Gonorrhea: Civilian	15,596	14,798	16,831	178,925	188,170	214,771
Military	247	394	471	4,230	4,564	6,279
Hepatitis: Type A	445	445	489	4,729	4,856	5,488
Type B	551	496	428	5,503	5,520	4,505
Non A, Non B	71	73	N	908	793	N
Unspecified	118	98	176	1,151	1,024	1,956
Legionellosis	6	16	N	121	111	N
Leprosy	7	3	3	73	50	48
Malaria	14	14	17	148	132	173
Measles: Total*	63	35	72	339	558	558
Indigenous	55	32	N	269	489	N
Imported	8	3	N	70	69	N
Meningococcal infections: Total	50	93	90	728	813	813
Civilian	50	93	90	728	813	813
Military	-	-	-	-	-	5
Mumps	155	59	127	931	808	1,316
Pertussis	50	33	22	291	406	243
Rubella (German measles)	12	10	56	80	121	479
Syphilis (Primary & Secondary) Civilian	530	542	591	5,567	6,535	7,055
Military	3	17	5	35	80	89
Toxic Shock syndrome	3	1	N	80	93	N
Tuberculosis	399	390	479	4,203	4,380	5,274
Tularemia	-	-	3	21	13	21
Typhoid fever	5	11	9	47	77	77
Typhus fever, tick-borne (RMSF)	2	1	-	7	11	11
Rabies, animal	76	106	145	917	982	1,128

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1985		Cum 1985
Anthrax	-	Plague	-
Botulism: Foodborne	1	Poliomyelitis: Total	1
Infant	9	Paralytic	1
Other	-	Psittacosis (Upstate N.Y. 2, Hawaii 2)	31
Brucellosis (La. 1)	18	Rabies, human	-
Cholera	-	Tetanus	11
Congenital rubella syndrome	-	Trichinosis (Upstate N.Y. 2, Mich. 1, Alaska 1)	11
Diphtheria	-	Typhus fever, flea-borne (endemic, murine)	3
Leptospirosis	6		

*Seven of the 63 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 23, 1985 and March 24, 1984 (12th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1985	1985	Cum. 1985	Cum. 1985	Cum. 1985	Cum. 1984	1985	1985	1985	1985	1985	Cum. 1985
UNITED STATES	1,229	66	199	25	178,925	188,170	445	551	71	118	6	73
NEW ENGLAND	40	-	3	-	5,785	5,867	6	35	4	12	-	1
Maine	2	-	-	-	232	230	-	-	-	-	-	-
N H	-	-	1	-	125	134	-	1	1	-	-	-
Vt.	-	-	-	-	51	91	-	1	-	-	-	-
Mass	24	-	2	-	2,191	2,179	5	19	2	12	-	1
R I	3	-	-	-	432	381	-	6	1	-	-	-
Conn.	11	-	-	-	2,754	2,852	1	8	-	-	-	-
MID ATLANTIC	441	17	31	-	23,776	25,339	45	113	6	7	-	6
Upstate N Y	62	9	14	-	3,556	3,868	24	60	4	3	-	-
N Y City	272	-	1	-	9,944	10,896	3	1	-	-	-	6
N J	68	4	9	-	5,119	3,970	8	20	-	4	-	-
Pa	39	4	7	-	5,157	6,605	10	32	2	-	-	-
E N. CENTRAL	74	3	48	5	26,176	26,257	20	46	4	3	1	1
Ohio	15	-	16	2	6,956	6,773	5	18	-	-	-	1
Ind.	4	1	9	-	2,306	2,590	3	3	-	1	-	-
Ill.	31	-	5	2	7,681	6,705	3	1	-	1	-	-
Mich.	14	2	15	-	7,483	7,323	9	24	4	1	1	-
Wis.	10	-	3	1	1,750	2,866	-	-	-	-	-	-
W N. CENTRAL	12	5	18	3	9,085	8,912	22	17	1	-	1	-
Minn.	3	4	6	1	1,326	1,220	7	4	-	-	-	-
Iowa	2	-	7	-	981	1,034	-	2	1	-	1	-
Mo.	5	1	-	-	4,199	4,142	4	11	-	-	-	-
N Dak.	-	-	-	1	72	104	-	-	-	-	-	-
S Dak.	-	-	-	-	166	274	10	-	-	-	-	-
Nebr.	-	-	1	-	802	612	1	-	-	-	-	-
Kans.	2	-	4	1	1,539	1,526	-	-	-	-	-	-
S. ATLANTIC	165	13	23	10	38,898	47,529	25	119	24	8	3	1
Del.	4	-	1	-	807	750	-	1	1	1	-	-
Md.	21	1	7	1	6,117	5,995	1	19	-	1	-	-
D.C.	21	1	-	-	3,263	3,481	-	7	-	-	-	-
Va.	9	-	1	3	4,041	4,503	1	3	2	-	-	-
W. Va.	1	-	2	-	527	579	-	4	3	-	-	-
N C.	12	6	10	-	7,910	7,811	3	13	2	-	-	1
S C.	1	-	2	-	4,952	4,480	3	18	2	1	1	-
Ga.	29	1	-	-	-	9,166	5	16	1	1	1	-
Fla.	67	4	-	6	11,281	10,764	12	38	13	4	1	-
E S. CENTRAL	9	1	7	3	15,727	15,673	11	38	2	1	-	-
Ky.	4	-	2	-	1,783	1,978	7	7	-	-	-	-
Tenn.	-	1	4	-	6,127	6,326	2	17	2	1	-	-
Ala.	4	-	1	3	4,890	4,992	1	13	-	-	-	-
Miss.	1	-	-	-	2,927	2,377	1	1	-	-	-	-
W S. CENTRAL	93	6	17	-	26,285	26,060	61	30	3	26	-	10
Ark.	-	-	1	-	2,490	2,210	-	-	-	-	-	-
La.	3	3	-	-	5,537	5,941	2	5	-	-	-	1
Okla.	2	-	9	-	2,639	2,868	6	4	-	4	-	-
Tex.	88	3	7	-	15,619	15,041	53	21	3	22	-	9
MOUNTAIN	19	4	6	2	5,806	5,777	60	41	6	17	1	-
Mont.	-	1	-	-	183	267	-	1	-	-	1	-
Idaho	-	-	-	-	209	276	1	2	-	-	-	-
Wyo.	-	-	-	-	157	164	3	-	-	-	-	-
Colo.	5	1	2	-	1,707	1,611	8	9	-	10	-	-
N. Mex.	3	-	-	-	702	728	9	8	-	2	-	-
Ariz.	7	1	-	-	1,727	1,496	27	11	4	4	-	-
Utah	1	1	4	2	233	323	2	3	-	1	-	-
Nev.	3	-	-	-	888	912	10	7	2	-	-	-
PACIFIC	376	17	46	2	27,387	26,756	195	112	21	44	-	54
Wash.	17	-	2	-	1,892	1,933	4	3	4	-	-	7
Oreg.	8	-	-	-	1,533	1,481	25	8	3	-	-	1
Calif.	344	14	44	2	22,850	22,197	166	98	14	44	-	41
Alaska	-	-	-	-	695	662	-	1	-	-	-	-
Hawaii	7	3	-	-	417	483	-	2	-	-	-	5
Guam	-	U	-	-	6	69	U	U	U	U	U	-
P R.	22	U	1	1	830	826	U	U	U	U	U	2
V I.	1	-	-	-	94	98	-	-	-	-	-	-
Pac. Trust Terr.	-	U	-	-	-	-	U	U	U	U	U	-

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 23, 1985 and March 24, 1984 (12th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1985	1985	Cum 1985	1985	Cum. 1985	Cum. 1984	Cum. 1985	1985	Cum. 1985	1985	Cum 1985	Cum 1984	1985	Cum. 1985	Cum 1984
UNITED STATES	148	55	269	8	70	558	728	155	931	50	291	406	12	80	121
NEW ENGLAND	6	-	-	1	4	1	33	2	25	1	9	12	1	4	11
Maine	-	-	-	-	-	-	1	-	2	-	2	-	-	-	1
N.H.	-	-	-	-	-	1	3	-	4	-	2	3	-	1	-
Vt.	-	-	-	-	-	-	4	-	2	1	2	5	-	-	-
Mass.	3	-	-	1 †	4	-	7	2	14	-	2	3	1	3	10
R.I.	1	-	-	-	-	-	6	-	2	-	1	1	-	-	-
Conn.	2	-	-	-	-	-	12	-	1	-	-	-	-	-	-
MID ATLANTIC	26	5	16	1	6	12	124	7	97	1	40	23	1	15	3
Upstate N.Y.	13	4	9	-	1	-	57	4	64	1	18	13	-	5	2
N.Y. City	6	1	7	1 §	3	9	11	3	11	-	7	1	1	7	-
N.J.	3	-	-	-	2	3	22	-	11	-	1	1	-	3	1
Pa.	4	-	-	-	-	-	34	-	11	-	14	8	-	-	-
E.N. CENTRAL	7	2	50	4	22	262	128	106	455	1	41	135	3	8	25
Ohio	1	-	-	-	13	2	45	88	156	-	13	26	-	-	1
Ind.	1	1	1	-	-	2	21	2	13	-	11	79	-	-	1
Ill.	-	-	3	-	-	51	23	13	70	-	3	11	2	2	17
Mich.	5	1	30	4 †	9	203	28	3	182	1	6	10	1	6	3
Wis.	-	-	16	-	-	4	11	-	34	-	8	9	-	-	3
W.N. CENTRAL	3	-	-	1	3	-	32	-	31	1	24	60	-	6	13
Minn.	1	-	-	1 †	1	-	8	-	-	-	7	2	-	-	1
Iowa	-	-	-	-	-	-	4	-	4	-	1	3	-	-	-
Mo.	1	-	-	-	2	-	17	-	5	1	7	11	-	-	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	4	-	-	-	2
S. Dak.	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Kans.	-	-	-	-	-	-	2	-	22	-	5	41	-	6	10
S. ATLANTIC	22	3	9	-	3	6	139	9	70	30	71	44	2	10	11
Del.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Md.	5	-	-	-	1	-	19	2	10	3	14	3	-	1	-
D.C.	3	-	-	-	1	-	4	-	-	-	-	-	-	-	-
Va.	5	2	6	-	1	2	19	1	11	-	1	7	-	-	-
W. Va.	1	-	-	-	-	-	3	3	27	-	-	4	-	-	-
N.C.	2	-	-	-	-	-	21	-	6	-	6	15	-	-	-
S.C.	-	-	-	-	-	-	11	-	1	-	-	1	-	2	-
Ga.	1	-	-	-	-	-	22	-	2	27	36	4	-	4	1
Fla.	5	1	3	-	-	4	38	3	13	-	14	10	2	3	10
E.S. CENTRAL	2	-	-	-	-	3	32	-	6	-	3	2	-	1	1
Ky.	-	-	-	-	-	1	2	-	1	-	1	1	-	1	-
Tenn.	-	-	-	-	-	2	12	-	4	-	1	1	-	-	-
Ala.	2	-	-	-	-	-	12	-	-	-	1	-	-	-	1
Miss.	-	-	-	-	-	-	6	-	1	-	-	-	-	-	-
W.S. CENTRAL	6	-	2	-	-	64	61	9	80	2	14	48	-	10	5
Ark.	-	-	-	-	-	-	6	-	1	-	7	9	-	1	2
La.	-	-	-	-	-	-	11	-	-	1	1	1	-	-	-
Okla.	-	-	-	-	-	-	9	N	N	1	6	30	-	-	-
Tex.	6	-	2	-	-	64	35	9	79	-	-	8	-	9	3
MOUNTAIN	5	40	146	-	16	89	40	7	62	2	18	38	-	1	3
Mont.	-	2	108	-	16	-	3	1	4	-	2	16	-	-	-
Idaho	-	-	-	-	-	-	-	1	4	-	-	1	-	-	1
Wyo.	-	-	-	-	-	-	3	1	1	-	-	1	-	-	-
Colo.	2	-	-	-	-	-	9	-	10	1	8	12	-	-	-
N. Mex.	3	-	-	-	-	64	4	N	N	-	2	2	-	-	-
Ariz.	-	38	38	-	-	-	15	4	37	1	3	3	-	1	-
Utah	-	-	-	-	-	25	4	-	2	-	3	1	-	-	2
Nev.	-	-	-	-	-	-	2	-	4	-	-	2	-	-	-
PACIFIC	71	5	46	1	16	121	139	15	105	12	71	44	5	25	49
Wash.	6	-	1	1 †	1	13	25	1	5	-	9	8	-	-	-
Oreg.	2	-	-	-	-	-	11	N	N	10	15	5	1	2	-
Calif.	54	5	42	-	12	106	102	14	91	2	44	18	4	21	48
Alaska	1	-	-	-	-	-	1	-	2	-	1	-	-	-	-
Hawaii	8	-	3	-	3	2	-	-	7	-	2	13	-	2	1
Guam	-	U	7	U	-	70	-	U	-	U	-	-	U	-	1
P.R.	-	U	38	U	-	-	3	U	37	U	1	-	U	4	2
V.I.	-	-	4	-	5	-	-	-	3	-	-	-	-	-	-
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 23, 1985 and March 24, 1984 (12th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1985	Cum. 1984	1985	Cum. 1985	Cum. 1984	Cum. 1985	Cum. 1985	Cum. 1985	Cum. 1985
UNITED STATES	5,567	6,535	3	4,203	4,380	21	47	7+2	917
NEW ENGLAND	124	138	-	138	118	-	4	-	-
Maine	3	1	-	13	6	-	-	-	-
N H	-	1	-	-	11	-	-	-	-
Vt	-	-	-	-	2	-	-	-	-
Mass	71	86	-	86	58	-	3	-	-
R I	4	7	-	16	14	-	-	-	-
Conn	46	43	-	23	27	-	1	-	-
MID ATLANTIC	720	881	-	827	814	1	7	-	97
Upstate N Y	45	72	-	107	132	-	4	-	19
N Y City	455	506	-	448	337	1	-	-	-
N J	158	180	-	62	157	-	2	-	1
Pa	62	123	-	210	188	-	1	-	77
E N CENTRAL	274	300	2	533	554	-	5	-	10
Ohio	29	53	1	99	116	-	2	-	1
Ind	17	35	-	63	62	-	2	-	2
Ill	149	122	-	236	226	-	1	-	2
Mich	67	68	1	109	117	-	-	-	-
Wis	12	22	-	26	33	-	-	-	5
W N CENTRAL	73	104	1	112	111	7	2	-	133
Minn	19	22	-	19	19	1	2	-	18
Iowa	11	10	-	18	20	-	-	-	41
Mo	28	58	1	51	43	5	-	-	8
N Dak	-	-	-	-	4	-	-	-	16
S Dak	4	-	-	5	3	-	-	-	43
Nebr	2	4	-	7	9	1	-	-	7
Kans	9	10	-	12	13	-	-	-	-
S ATLANTIC	1,412	2,011	-	861	1,003	4	8	5+2	296
Del	12	7	-	8	14	-	-	-	-
Md	104	130	-	94	104	-	1	-	180
D C	75	69	-	38	32	-	-	-	-
Va	80	107	-	60	81	-	1	-	40
W Va	2	8	-	21	38	-	-	-	3
N C	167	228	-	98	170	4	1	4 2	-
S C	196	185	-	109	112	-	-	1	10
Ga	-	335	-	132	134	-	-	-	41
Fla	776	942	-	301	318	-	5	-	22
E S CENTRAL	498	409	-	362	410	2	2	2	47
Ky	19	23	-	62	98	-	-	-	7
Tenn	148	97	-	112	125	2	-	1	10
Ala	178	149	-	136	147	-	2	1	30
Miss	153	140	-	52	40	-	-	-	-
W S CENTRAL	1,408	1,603	-	415	424	2	2	-	173
Ark	76	63	-	29	37	1	-	-	20
La	245	297	-	73	54	-	-	-	4
Okla	43	48	-	55	47	1	-	-	21
Tex	1,044	1,195	-	258	286	-	2	-	128
MOUNTAIN	186	136	-	82	90	3	-	-	72
Mont	1	-	-	13	7	-	-	-	33
Idaho	2	8	-	2	4	-	-	-	-
Wyo	4	1	-	1	-	-	-	-	2
Colo	45	31	-	3	7	-	-	-	-
N Mex	21	15	-	15	23	1	-	-	1
Ariz	103	49	-	40	37	-	-	-	36
Utah	3	6	-	3	8	2	-	-	-
Nev	7	26	-	5	4	-	-	-	-
PACIFIC	872	953	-	873	856	2	17	-	89
Wash	23	38	-	32	40	-	-	-	-
Oreg	27	29	-	28	37	1	-	-	-
Calif	805	864	-	732	710	1	17	-	89
Alaska	-	1	-	38	17	-	-	-	-
Hawaii	17	21	-	43	52	-	-	-	-
Guam	-	-	U	2	5	-	-	-	-
P R	196	202	U	61	75	-	1	-	4
V I	-	6	-	1	1	-	-	-	-
Pac. Trust Terr	-	-	U	-	-	-	-	-	-

U Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending March 23, 1985 (12th Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	811	568	168	28	23	23	73
Boston, Mass.	243	153	56	16	12	6	23
Bridgeport, Conn.	46	34	10	-	2	-	4
Cambridge, Mass.	24	20	3	-	-	1	4
Fall River, Mass.	29	23	4	1	-	-	-
Hartford, Conn.	66	47	15	-	1	3	3
Lowell, Mass.	36	28	5	3	-	-	6
Lynn, Mass.	16	12	3	-	1	-	2
New Bedford, Mass	27	19	5	-	2	1	2
New Haven, Conn.	54	43	7	2	-	2	1
Providence, R.I.	103	69	26	-	5	3	14
Somerville, Mass.	14	11	3	-	-	-	2
Springfield, Mass.	54	35	12	2	-	5	1
Waterbury, Conn.	29	22	5	2	-	-	3
Worcester, Mass.	70	52	14	2	-	2	8
MID. ATLANTIC	3,432	2,239	765	265	66	97	216
Albany, N.Y.	67	43	17	3	3	1	1
Allentown, Pa.	27	19	7	1	-	-	2
Buffalo, N.Y.	143	105	31	5	-	2	23
Camden, N.J.	36	23	10	1	1	1	1
Elizabeth, N.J.	13	10	2	-	1	-	6
Erie, Pa.†	42	26	12	2	2	-	4
Jersey City, N.J.	53	29	12	5	6	1	2
N.Y. City, N.Y.	1,510	947	342	151	28	42	73
Newark, N.J.	79	36	25	13	4	1	7
Paterson, N.J.	34	21	6	2	2	3	3
Philadelphia, Pa.	993	659	223	57	15	39	67
Pittsburgh, Pa.†	56	38	12	3	-	3	-
Reading, Pa.	26	19	5	1	1	-	1
Rochester, N.Y.	117	85	18	11	1	2	12
Schenectady, N.Y.	33	26	6	1	-	-	3
Scranton, Pa.†	38	29	7	1	-	1	3
Syracuse, N.Y.	88	71	9	5	2	1	2
Trenton, N.J.	28	17	10	1	-	-	1
Utica, N.Y.	19	15	4	-	-	-	2
Yonkers, N.Y.	30	21	7	2	-	-	3
E.N. CENTRAL	2,213	1,571	373	126	53	89	85
Akron, Ohio	60	47	9	2	1	1	1
Canton, Ohio	29	19	9	-	1	-	-
Chicago, Ill §	554	463	11	26	16	37	16
Cincinnati, Ohio	146	100	37	5	1	3	15
Cleveland, Ohio	161	93	42	11	6	9	3
Columbus, Ohio	129	92	23	7	3	4	3
Dayton, Ohio	113	80	24	5	2	2	4
Detroit, Mich.	266	153	61	28	8	16	6
Evansville, Ind.	42	32	9	1	-	-	-
Fort Wayne, Ind.	42	27	8	3	2	2	2
Gary, Ind.	18	8	4	4	2	-	-
Grand Rapids, Mich.	28	23	3	2	-	-	2
Indianapolis, Ind.	147	90	38	12	5	2	2
Madison, Wis.	45	35	9	-	-	1	6
Milwaukee, Wis.	133	93	30	3	3	4	3
Peoria, Ill.	55	39	13	2	1	-	6
Rockford, Ill.	34	25	5	2	-	2	2
South Bend, Ind.	47	33	10	2	-	2	6
Toledo, Ohio	113	77	22	8	2	4	8
Youngstown, Ohio	51	42	6	3	-	-	-
W.N. CENTRAL	751	514	149	43	20	25	27
Des Moines, Iowa	78	55	18	3	2	-	2
Duluth, Minn.	26	21	4	-	1	-	1
Kansas City, Kans.	35	23	7	4	-	1	1
Kansas City, Mo.	117	69	27	7	4	10	3
Lincoln, Nebr.	32	24	4	3	1	-	3
Minneapolis, Minn.	110	66	24	11	3	6	1
Omaha, Nebr.	82	57	17	2	2	4	8
St. Louis, Mo.	138	112	21	3	2	-	3
St. Paul, Minn.	84	57	18	6	2	1	1
Wichita, Kans.	49	30	9	4	3	3	4
S. ATLANTIC	1,405	871	314	123	41	54	79
Atlanta, Ga.	155	104	33	13	3	2	7
Baltimore, Md.	239	144	59	25	7	4	7
Charlotte, N.C.	78	55	12	6	2	3	12
Jacksonville, Fla.	113	68	26	11	6	2	5
Miami, Fla.	106	69	22	8	3	4	1
Norfolk, Va.	76	49	16	5	3	3	7
Richmond, Va.	86	49	24	7	2	4	5
Savannah, Ga.	42	25	11	2	4	-	3
St. Petersburg, Fla.	134	107	18	2	1	6	9
Tampa, Fla.	65	41	10	5	5	3	2
Washington, D.C.	274	144	76	36	5	12	20
Wilmington, Del.	37	16	7	3	-	11	1
E.S. CENTRAL	747	465	183	48	17	34	42
Birmingham, Ala.	115	82	24	3	1	5	3
Chattanooga, Tenn.	67	45	18	1	1	2	5
Knoxville, Tenn.	67	47	16	4	-	-	6
Louisville, Ky.	64	46	15	2	-	1	1
Memphis, Tenn.	164	99	37	11	2	15	14
Mobile, Ala.	89	46	21	11	4	7	6
Montgomery, Ala.	58	40	15	2	-	1	3
Nashville, Tenn.	123	60	37	14	9	3	4
W.S. CENTRAL	1,453	1,006	243	90	59	55	75
Austin, Tex.	61	39	15	5	2	-	6
Baton Rouge, La.	59	35	13	5	5	1	3
Corpus Christi, Tex.	29	20	4	5	-	-	1
Dallas, Tex.	213	131	42	15	13	12	7
El Paso, Tex.	41	26	8	4	1	2	5
Fort Worth, Tex.	103	67	20	5	4	7	10
Houston, Tex. §	329	287	4	9	16	13	12
Little Rock, Ark.	90	61	21	4	2	2	9
New Orleans, La.	150	92	35	13	7	3	2
San Antonio, Tex.	219	141	48	16	4	10	11
Shreveport, La.	69	48	15	3	2	1	2
Tulsa, Okla.	90	59	18	6	3	4	7
MOUNTAIN	737	476	156	62	20	23	49
Albuquerque, N.Mex.	87	50	20	10	2	5	4
Colo. Springs, Colo.	52	37	8	3	3	1	8
Denver, Colo.	111	71	24	15	1	-	6
Las Vegas, Nev.	109	60	32	10	3	4	6
Ogden, Utah	22	16	2	1	2	1	5
Phoenix, Ariz.	179	121	37	10	6	5	6
Pueblo, Colo.	20	13	5	2	-	-	2
Salt Lake City, Utah	57	36	12	4	1	4	1
Tucson, Ariz.	100	72	16	7	2	3	11
PACIFIC	2,193	1,519	399	137	70	62	164
Berkeley, Calif.	12	12	-	-	-	-	1
Fresno, Calif.	99	57	25	4	8	5	11
Glendale, Calif.	37	33	4	-	-	-	5
Honolulu, Hawaii §	76	72	1	-	2	1	7
Long Beach, Calif.	116	87	18	5	2	4	8
Los Angeles, Calif.	696	475	131	58	19	7	35
Oakland, Calif.	71	46	11	8	3	3	7
Pasadena, Calif.	41	28	9	2	1	1	3
Portland, Oreg.	127	97	20	6	2	2	5
Sacramento, Calif.	160	97	33	9	9	12	13
San Diego, Calif.	142	102	30	3	3	4	20
San Francisco, Calif.	130	86	27	10	3	4	3
San Jose, Calif.	210	141	37	15	11	6	27
Seattle, Wash.	156	102	30	12	4	8	6
Spokane, Wash.	54	37	13	2	2	-	4
Tacoma, Wash.	66	47	10	3	1	5	9
TOTAL	13,742††	9,229	2,750	922	369	462	810

* 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.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Measles — Puerto Rico

A measles outbreak in Puerto Rico began in July 1984 and continues into March 1985. From July 1, to October 31, 1984, 137 confirmed measles cases were identified by the Puerto Rico Department of Health and comprise the data for this report. Twenty-nine cases (21.2%) were serologically confirmed. In the preceding 6 months, one clinically confirmed case had been reported with rash onset in May. One hundred twenty patients (87.6%) lived in the Metropolitan Health Region, including 55 in each of two areas within the municipality of San Juan (Santurce and Rio Piedras) and 10 in the nearby town of Loiza. Many of the patients from the municipality of San Juan lived in public housing projects. The first two patients, both from Santurce, had onsets of rash on July 1 and July 3 (Figure 1). The source of their infections is unknown.

Of the 120 patients in the Metropolitan Health Region, 32 (26.7%) were under 1 year of age, 56 (46.7%) were under 16 months of age, and 111 (92.5%) were preschool-aged (under 5 years old) (Table 3). By contrast, 12 (70.6%) of the 17 patients outside the Metropolitan Health Region were school-aged or older ($p = 4.6 \times 10^{-8}$). The current recommended age for measles vaccination in Puerto Rico is 15 months.

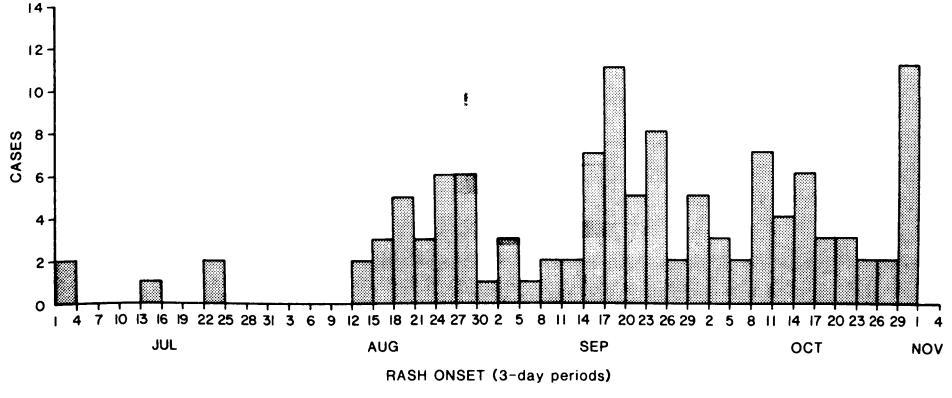
The overall attack rate for the municipality of San Juan was 25 cases/100,000 population. Age-specific attack rates in the municipality were 769/100,000 for infants 6-11 months of age and 268/100,000 for children 1-4 years of age.*

Of the 137 total cases, 51 patients (37.2%) had diarrhea; 48 (35.0%) had vomiting; and 77 (56.2%) had one or both of these symptoms. The severity of these gastrointestinal symptoms, however, was unknown. Fifteen patients (10.9%) developed otitis media; six (4.4%) acquired pneumonia; and one (0.7%) developed meningitis. Twenty patients had at least one of these three complications, for a complication-to-case ratio of 14.6%. Twelve patients (8.8%) were hospitalized; the length of hospitalization ranged from 1 to 8 days (median 5 days). There were no measles-associated fatalities.

The probable setting of transmission was known for 62 (45.3%) of the cases: household/-family contact—34 (54.8%); medical facility—14 (22.6%); neighborhood—13 (21.0%); school—1 (1.6%). There was no significant difference in the settings of transmission for the 14 patients under 1 year of age, compared to the 48 patients 12 months of age and older. Seventy-two cases (52.6%) were nonpreventable according to the CDC classification (*1*).

*Population data based on 1980 census and 1982 vital statistics.

FIGURE 1. Reported measles cases, by date of rash onset — Metropolitan Health Region, Puerto Rico, July 1-October 31, 1984



Measles — Continued

Fifty-nine (81.9%) of these were nonpreventable because the patients were below the recommended age of vaccination. Twelve patients (16.7%) had histories of adequate vaccination, and one (1.4%) had a medical contraindication to measles vaccine.

Measures were taken to increase surveillance. Press releases were issued by the Puerto Rico Department of Health, and the outbreak was publicized by the news media on October 18. Information was distributed in neighborhoods throughout San Juan alerting people to the outbreak and recommending vaccination. Pediatricians were notified of the outbreak through a presentation at a pediatric conference on October 30 and by a letter sent out November 13. In early November, an active surveillance system involving public health clinics, private physicians, schools, licensed day-care centers, Head Start programs, and regional immunization nurses was developed.

Measles control activities of the various divisions within the Puerto Rico and municipal San Juan health departments were physically centralized in the commonwealth's Division of Maternal and Child Health. Case investigation was improved by providing epidemiologic training to investigators and by modifying the case investigation form. The few susceptible individuals identified at institutions (schools, day-care centers, Head Start programs) where patients with measles were enrolled were referred to public health clinics or private physicians for vaccination. Special vaccination clinics were established on November 13 at five different sites in the two major outbreak areas (Santurce and Rio Piedras) and were widely publicized. Two mobile vans provided measles vaccination in other areas.

Because of the large number of measles patients under 1 year of age, the recommended age of vaccination was lowered from 15 months to 6 months in the two major outbreak areas. Those from 6 to 11 months of age were to be given single-antigen measles vaccine and were scheduled to receive measles-mumps-rubella (MMR) vaccine at 15 months of age. Susceptible children 12 months of age or older were to be vaccinated with MMR. Those under 1 year of age who were direct contacts of a measles patient were to be given immune globulin. These recommendations have only been partially followed during the major portion of the outbreak.

Reported by L Montalvo, MD, J Martinez-Gonzalez, MD, San Juan Dept of Health, T Robles, MD, I Carrion, MD, A Bonet, M Martinez, Metropolitan Health Region, M Sage, Immunization Program, JG Rigau-Perez, MD, Commonwealth Epidemiologist, Puerto Rico Dept of Health; Div of Immunization, Center for Prevention Svcs, CDC.

Editorial Note: Puerto Rico currently represents the focus of the greatest persistent measles activity in the United States and its territories. As of March 16, 1985, 293 cases have been reported as part of this outbreak. An additional imported case in a 2-year-old resident of San

TABLE 3. Age distribution of reported measles patients — Puerto Rico, July 1, 1984-October 31, 1984.

Age	Metropolitan Health Region No. (%)	Outside Metropolitan Health Region No. (%)	Total No. (%)
0-11 months	32 (26.7)	3 (17.6)	**35 (25.5)**
12-15 months	24 (20.0)	0 (0.0)	**24 (17.5)**
16-23 months	20 (16.7)	1 (5.9)	**21 (15.3)**
2-4 years	35 (29.2)	1 (5.9)	**36 (26.3)**
5-9 years	7 (5.8)	6 (35.3)	**13 (9.5)**
10-14 years	1 (0.8)	0 (0.0)	**1 (0.7)**
15-19 years	0 (0.0)	4 (23.5)	**4 (2.9)**
≥ 20 years	1 (0.8)	2 (11.8)	**3 (2.2)**
Total	**120 (100.0)**	**17 (100.0)**	**137 (100.0)**

Measles — Continued

Juan with rash onset on December 2 was reported from Ohio. Until last year, the number of reported measles cases in Puerto Rico had declined from 2,021 in 1973 to 95 in 1983. The incidence rate over the same period fell from 70.4 cases/100,000 population to 2.9 cases/100,000 population (*2*).

A commonwealth school entry law, which was passed in 1974 and implemented in the 1975-1976 school year, required proof of measles vaccination before entering kindergarten or first grade. This was amended in September 1983 to require all persons under age 22 years to be immunized in order to attend day-care centers, primary, secondary, and post-secondary schools. The failure of this outbreak to spread significantly to the school-aged population suggests that the school laws have been successfully implemented.

In the current outbreak, 46.7% of patients were under 16 months of age, compared to 13.2% in the United States for the first 39 weeks of 1984 (*3*). From 1980 to 1983, there were 890 reported cases in Puerto Rico. Of 801 for whom age was known, 220 (27.5%) were under 1 year of age, and 513 (64%) were under 5 years of age. The age distribution of cases in Puerto Rico is more characteristic of that seen in developing countries than in the United States. It is a source of concern, since measles is a more serious illness in the youngest age groups (*4*).

Determinants of the age-specific incidence of measles include population density, mobility, patterns of human interaction, and child-rearing practices (*5*). Specifically, the following have been identified as factors contributing to onset at a young age: (1) overcrowding, (2) poor housing, (3) extended families, and (4) children being carried around by their mothers or siblings (*6,7*). Each of these elements was present in the outbreak areas in Puerto Rico. Additionally, working mothers in the affected public housing projects often leave children during the day in "unlicensed day-care centers" (i.e., neighbors' homes), where spread of measles among infants and young children has been implicated.

Like the age distribution, the frequency of diarrhea among measles patients in Puerto Rico is more characteristic of the disease in developing countries than in the United States. The severity of diarrhea in these patients, however, was unknown. Diarrhea associated with measles is particularly common in the tropics and may cause dehydration and death. The presence of diarrhea has been noted to correlate with the severity of measles (*8*).

The global case-fatality ratio in the developing world approaches 2% and has been reported to be as high as 25% in some countries (*5,6*). No deaths occurred in the present outbreak. Measles mortality may be lower in Puerto Rico than in developing countries because few risk factors for measles mortality are present. Of the four risk factors for measles mortality (*5*)— young age at onset, severe undernutrition, frequent and/or severe complications, and unavailable health care—only the first seems to be present in Puerto Rico.

The Puerto Rico outbreak illustrates the importance of the preschool population in disseminating measles in certain outbreaks. Although most susceptible school-aged children will be identified and vaccinated as implementation of immunization laws continues, ensuring age-appropriate immunization of the preschool-aged population remains a critical task in many areas. Possible approaches to reach preschool children 15 months of age and older include holding special preschool vaccination clinics, publicizing the importance of vaccination against measles in the community and in the local press, continuing enforcement of immunization laws for day-care centers and Head Start programs, and vaccinating susceptible children seen in medical facilities for other reasons. Measles in children under 16 months of age should decline as the incidence rate falls in other age groups by removing potential sources of infection. Should these measures fail to control measles in infants and young children, other strategies may have to be considered.

Measles — Continued

References

1. CDC. Classification of measles cases and categorization of measles elimination programs. MMWR 1982;31:707-11.
2. Rigau-Perez JG. Health objectives for the United States in 1990 and their application to Puerto Rico: II. Immunizations. Bol Asoc Med P Rico 1984;76:424-8.
3. CDC. Measles—United States, first 39 weeks, 1984. MMWR 1984;33:673-6.
4. CDC. Measles surveillance report no. 11, 1977-1981. September 1982.
5. Foster SO. Immunizable and respiratory diseases and child mortality. In: WH Mosley, LC Chen, eds. Child survival: strategies for research. New York: Population Council, Inc., 1984:119-40.
6. Assaad F. Measles: summary of worldwide impact. Rev Infect Dis 1983;5:452-9.
7. Henderson RH. Vaccine preventable diseases of children: the problem. In: Protecting the world's children: vaccines and immunization. A Bellagio Conference, March 13-15, 1984. Rockefeller Foundation, June 1984:1-15.
8. Morley D. Severe measles in the tropics. I. Br Med J 1969;1:297-300.

Notice to Readers

NIOSH National Symposium on the Prevention of the Leading Work-Related Diseases and Injuries

On May 1-3, 1985, the National Institute for Occupational Safety and Health (NIOSH), in cooperation with the Association of Schools of Public Health, will hold a National Symposium on the Prevention of the Leading Work-Related Diseases and Injuries. The symposium will introduce and discuss national strategies for preventing five of the leading work-related diseases and injuries—occupational lung diseases, musculoskeletal injuries, occupational cancers, severe occupational traumatic injuries, and cardiovascular diseases. The symposium will be held in Atlanta, Georgia. For further information, contact: Roger Turenne, Symposium Coordinator, telephone. FTS 236-3794; commercial (404) 329-3794.

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