

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

- International Notes**
549 Program to Eradicate Dracunculiasis — India
- Epidemiologic Notes and Reports**
550 Measles Among Children with Religious Exemptions to Vaccination — Massachusetts, Ohio

International Notes

Program to Eradicate Dracunculiasis — India

A program to eradicate guinea worm disease (dracunculiasis) in India was recently begun (1). Because of the epidemiology of this disease and its relatively restricted distribution, such a program is thought to be feasible.

As an initial step in October 1979, questionnaires were sent to directors of health services in all states and union territories. This survey was designed to determine the extent, rather than the intensity, of the disease. Seven states and 1 union territory reported recent cases. Approximately 726 villages/hamlets with a population of 1.8 million persons were tentatively identified in this first estimate.

To determine more accurately the areas affected with guinea worm disease, paramedical workers were requested to carry out an active search by visiting each village in the endemic states and union territory. Information was also collected on the source(s) of drinking water in each village. The study was extended to include 1980. As a result of this search, the disease was observed to be more extensively distributed than the questionnaires had originally indicated: more than 7,500 villages/hamlets with a population of 5.9 million were found to be affected.

Steps in the plan for eradication of guinea worm disease in India include the following: 1) continued, semi-annual monitoring of all affected areas; 2) surveying water sources to determine priorities for providing improvements; 3) educating communities about the hazards of unsafe water sources, mode of transmission of dracunculiasis, and personal hygiene necessary to prevent and control the disease; and 4) training health officers and distributing an operational manual on the eradication of guinea worm disease.

With the above strategy it is hoped that the disease can be eliminated from India by December 1985.

Reported by CK Rao, MD, National Institute of Communicable Diseases, Delhi, India; International Health Program Office, CDC.

Editorial Note: These data from India illustrate that active surveillance is a quick and effective tool with which affected countries can identify guinea worm-transmission areas. In this instance, it was learned that anti-guinea worm efforts can be concentrated in the approximately 1.26% of India's villages where transmission can be anticipated. The Steering Committee of the International Drinking Water Supply and Sanitation Decade stated in April 1981, and the 34th World Health Assembly passed a resolution 1 month later, that a reduction in dracunculiasis would be a desirable, disease-specific indicator of improved water supplies in endemic areas. The Indian example warrants consideration in other countries (2).

References

1. Rao CK, Paul RC, Sharma MID, Kumar S. Guinea worm disease in India—current status and strategy of its eradication. *J Commun Dis (Delhi)* 1981;13:1-7.
2. CDC. Guinea worm (dracunculiasis) and the International Water Supply and Sanitation Decade, *MMWR* 1981;30:194-5.

Epidemiologic Notes and Reports

Measles Among Children with Religious Exemptions to Vaccination — Massachusetts, Ohio

Massachusetts: A total of 15 confirmed cases of measles, with onset of rash from January 22, 1981, through March 6, 1981 (Figure 1) occurred in an outbreak in Brookline, Massachusetts. Ages of the patients ranged from 2 to 13 years. Twelve children (80.0%) attended the same elementary school, 1 (6.7%) attended another school nearby, and 2 (13.3%) were preschoolers. Nine of the cases had not been vaccinated against measles because of family religious beliefs, including 7 in the first elementary school, plus 2 preschool siblings.

The index patient was a 7-year-old child with serologically confirmed measles, who had been vaccinated at 13-1/2 months of age. The outbreak was recognized in its second generation, and a measles-control program was initiated in the school; susceptible students were excluded from attending school until they could show documented evidence of vaccination. Three more generations of the disease occurred among unvaccinated or inadequately vaccinated children, without further cases among those adequately vaccinated.

There were 368 students enrolled in the elementary school associated with the outbreak. Of the 356 children who had acceptable evidence of immunity to measles (i.e., documentation of measles vaccination on or after the first birthday, or documentation of physician-diagnosed measles illness), 3 developed measles (attack rate 0.8%). Of 5 children who had received measles vaccination before they were 12 months old, 2 developed measles (attack rate 40.0%).

(Continued on page 555)

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

DISEASE	44th WEEK ENDING			CUMULATIVE, FIRST 44 WEEKS		
	November 7 1981	November 1 1980	MEDIAN 1976-1980	November 7 1981	November 1 1980	MEDIAN 1976-1980
Aseptic meningitis	200	292	139	7,907	6,580	5,473
Brucellosis	—	2	2	131	158	158
Chickenpox	1,276	1,228	1,374	173,793	162,685	162,685
Encephalitis:	34	40	27	1,196	1,020	1,020
Primary (arthropod-borne & unsp.)	1	5	5	75	186	189
Post-infectious	19,719	21,004	20,510	849,524	850,236	850,236
Gonorrhea:	522	397	611	23,763	23,221	23,221
Civilian	400	676	593	21,075	23,874	25,172
Military	363	481	292	17,325	15,176	12,696
Hepatitis:	195	314	179	9,241	9,804	7,405
Type A	1	13	4	211	191	133
Type B	25	47	12	1,176	1,712	641
Type unspecified	17	30	99	2,819	13,104	24,826
Leprosy	42	46	29	2,948	2,280	2,059
Malaria	42	46	28	2,937	2,264	2,035
Measles (rubeola)	—	—	—	11	16	17
Meningococcal infections:	95	111	193	3,680	7,665	14,346
Total	19	34	34	1,043	1,456	1,456
Civilian	22	30	87	1,879	3,465	11,160
Military	693	666	444	26,036	22,938	20,504
Mumps	4	9	6	327	271	264
Primary & Secondary):	547	600	540	23,048	23,010	24,554
Civilian	5	11	4	222	196	142
Military	10	12	10	509	444	437
Tuberculosis	12	19	6	1,145	1,121	1,010
Tularemia	98	75	60	6,282	5,544	2,718
Typhoid fever						
Typhus fever, tick-borne (RMSF)						
Rabies, animal						

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	—	Poliomyelitis: Total	7
Botulism (Ohio 1, Ark. 1, Calif. 1)	67	Paralytic	6
Cholera	14	Psittacosis	89
Congenital rubella syndrome (Calif. 1)	11	Rabies, human	1
Diphtheria	4	Tetanus	51
Leptospirosis (Va. 1)	42	Trichinosis (N.J. 1, W. Va. 1)	118
Plague	9	Typhus fever, flea-borne (endemic, murine)(Tex. 2)	39

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There were 368 students enrolled in the elementary school associated with the outbreak. Of the 356 children who had acceptable evidence of immunity to measles (i.e., documentation of measles vaccination on or after the first birthday, or documentation of physician-diagnosed measles illness), 3 developed measles (attack rate 0.8%). Of 5 children who had received measles vaccination before they were 12 months old, 2 developed measles (attack rate 40.0%).

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Plague	92	Typhus fever, flea-borne (endemic, murine) (Tex. 2)	39

TABLE III. Cases of specified notifiable diseases, United States, weeks ending
November 7, 1981 and November 1, 1980 (44th week)

REPORTING AREA	ASEPTIC MENIN- GITIS	BRUCE- LOSIS	CHICKEN- POX	ENCEPHALITIS		GONORRHEA (Civilian)		HEPATITIS (Viral), by type			LEPROSY
				Primary	Post-in- fectious			A	B	Unspecified	
				CUM. 1981	CUM. 1981	CUM. 1981	CUM. 1980	1981	1981	1981	
UNITED STATES	200	131	1,276	1,196	75	849,524	850,236	400	363	195	211
NEW ENGLAND	7	4	191	41	7	21,206	21,434	9	21	12	3
Maine	2	-	64	1	-	1,126	1,234	-	3	-	-
N.H.	-	-	7	4	-	762	753	1	1	-	-
Vt.	-	-	8	-	-	374	483	1	-	3	-
Mass.	3	3	45	15	-	8,821	9,017	1	3	8	2
R.I.	-	1	12	1	2	1,238	1,379	4	2	-	-
Conn.	2	-	55	20	5	8,885	8,568	2	12	1	1
MID. ATLANTIC	16	7	35	98	8	102,815	94,949	47	65	29	13
Upstate N.Y.	4	3	20	27	3	17,923	16,995	14	16	6	3
N.Y. City	2	1	15	19	-	42,040	37,737	12	18	6	8
N.J.	5	1	N	15	-	19,459	17,102	21	31	17	2
Pa.	5	2	-	37	5	23,393	23,115	0	0	0	-
E.N. CENTRAL	44	6	543	420	11	124,546	131,696	78	65	20	20
Ohio	5	1	-	210	2	39,942	34,303	26	27	10	-
Ind.	12	1	54	123	8	10,736	13,679	14	4	5	-
Ill.	-	-	56	7	-	34,260	41,615	16	17	2	18
Mich.	27	2	299	60	1	27,985	29,915	19	16	3	2
Wis.	-	2	134	20	-	11,623	12,184	3	1	-	-
W.N. CENTRAL	12	17	208	93	6	41,227	40,462	14	13	3	3
Minn.	10	4	1	38	3	6,515	6,600	3	3	1	1
Iowa	1	4	132	27	2	4,525	4,326	3	1	-	-
Mo.	-	4	1	9	-	19,195	17,768	5	6	1	-
N. Dak.	-	-	4	1	-	517	565	-	-	-	-
S. Dak.	-	1	7	1	-	1,098	1,185	2	-	-	-
Nebr.	-	1	4	4	-	3,040	3,184	-	1	-	-
Kans.	1	3	59	13	1	6,337	6,834	1	2	1	2
S. ATLANTIC	21	30	125	126	19	209,753	213,637	38	58	29	12
Del.	-	2	1	-	-	3,332	2,974	-	-	1	-
Md.	3	-	4	20	2	25,033	22,874	1	7	4	-
D.C.	1	-	-	-	-	11,841	14,728	-	2	-	2
Va.	4	8	7	36	3	19,249	19,672	5	7	4	3
W. Va.	1	1	79	20	-	3,157	2,918	-	2	1	-
N.C.	4	1	N	31	1	32,437	32,069	1	1	4	-
S.C.	1	-	-	4	-	20,383	19,941	-	4	-	7
Ga.	1	6	1	2	-	43,505	41,528	10	18	-	-
Fla.	7	12	33	13	13	50,816	56,933	21	17	15	-
E.S. CENTRAL	35	12	8	139	7	70,939	68,699	17	22	2	-
Ky.	8	1	6	21	2	8,806	10,153	6	8	1	-
Tenn.	11	5	N	80	1	26,826	24,734	6	11	1	-
Ala.	16	4	1	21	2	21,661	20,205	-	2	-	-
Miss.	-	2	1	17	2	13,646	13,607	5	1	-	-
W.S. CENTRAL	15	36	70	108	4	112,345	107,906	44	21	43	22
Ark.	1	5	-	5	-	8,515	8,741	1	1	3	1
La.	2	1	N	7	1	19,575	19,504	4	2	3	-
Okla.	-	7	-	23	1	12,247	10,730	6	4	3	-
Tex.	12	23	70	73	2	72,008	68,931	33	14	34	21
MOUNTAIN	8	5	15	39	3	33,156	32,690	22	22	14	5
Mont.	-	-	-	2	-	1,241	1,241	1	-	-	-
Idaho	1	-	-	-	-	1,497	1,436	-	1	-	1
Wyo.	-	-	-	1	-	870	962	-	-	-	-
Colo.	6	1	-	11	1	8,824	8,914	8	13	4	-
N. Mex.	-	-	-	-	-	3,725	3,978	7	1	3	-
Ariz.	U	1	N	15	-	9,729	8,637	U	U	U	3
Utah	1	-	-	9	2	1,665	1,648	1	-	5	-
Nev.	-	3	15	1	-	5,605	5,874	5	7	2	1
PACIFIC	42	14	81	132	10	133,537	138,763	131	76	43	133
Wash.	13	-	62	12	1	11,018	11,968	16	5	1	5
Oreg.	-	-	-	6	1	7,974	9,612	8	6	2	5
Calif.	29	14	5	105	8	108,478	110,991	105	64	40	84
Alaska	-	-	6	5	-	3,459	3,419	1	1	-	-
Hawaii	-	-	8	4	-	2,608	2,773	1	-	-	39
Guam	U	-	U	-	-	73	116	U	U	U	-
P.R.	-	-	12	1	-	2,694	2,311	7	11	5	2
V.I.	-	-	-	-	-	203	108	-	-	-	-
Pac. Trust Terr.	U	-	U	-	-	329	357	U	U	U	16

N: Not notifiable

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending
November 7, 1981 and November 1, 1980 (44th week)

REPORTING AREA	MALARIA		MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS (Total)		MUMPS		PERTUSSIS	RUBELLA		
	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1980
UNITED STATES	25	1,176	17	2,819	13,104	42	2,948	95	3,680	19	22	1,879	3,465
NEW ENGLAND	-	64	-	86	675	1	191	5	190	3	2	123	209
Maine	-	1	-	5	33	-	24	1	36	3	-	33	68
N.H.	-	3	-	7	331	-	19	-	23	-	-	51	40
Vt.	-	6	-	3	226	-	8	-	6	-	-	-	3
Mass.	-	30	-	61	58	1	62	2	56	-	2	27	69
R.I.	-	3	-	-	2	-	17	2	25	-	-	-	9
Conn.	-	21	-	10	25	-	61	-	44	-	-	12	20
MID. ATLANTIC	5	151	3	876	3,813	11	433	13	619	2	-	223	561
Upstate N.Y.	-	33	2	219	699	3	138	7	130	1	-	107	215
N.Y. City	-	56	1	89	1,194	2	70	2	86	-	-	55	99
N.J.	3	45	-	58	839	1	94	3	99	-	-	48	101
Pa.	2	17	-	510	1,081	5	131	1	304	1	-	13	146
E.N. CENTRAL	2	56	-	81	2,445	6	361	36	1,047	8	11	389	832
Ohio	-	8	-	16	380	1	136	17	190	2	-	3	8
Ind.	1	7	-	9	92	-	47	3	117	5	3	135	353
Ill.	-	17	-	23	348	2	86	4	195	1	5	94	166
Mich.	1	24	-	30	250	3	85	9	340	-	3	37	129
Wis.	-	-	-	3	1,375	-	7	3	205	-	-	120	176
W.N. CENTRAL	1	33	-	10	1,338	-	139	10	216	1	1	79	207
Minn.	1	14	-	3	1,103	-	46	-	8	-	1	8	28
Iowa	-	4	-	1	20	-	25	2	65	1	-	4	9
Mo.	-	3	-	1	65	-	42	1	21	-	-	2	45
N. Dak.	-	1	-	-	-	-	2	-	-	-	-	-	6
S. Dak.	-	1	-	-	-	-	7	-	1	-	-	-	2
Nebr.	-	2	-	4	83	-	-	-	3	-	-	1	4
Kans.	-	8	-	1	67	-	17	7	118	-	-	64	113
S. ATLANTIC	4	143	9	454	1,969	11	674	9	523	-	2	144	338
Del.	-	1	-	-	3	-	4	-	10	-	-	1	1
Md.	-	34	-	5	83	-	45	3	96	-	-	1	68
D.C.	-	9	-	1	5	2	6	-	3	-	-	-	1
Va.	1	30	-	9	339	1	88	-	125	-	-	11	40
W. Va.	-	4	-	9	10	-	24	5	89	-	-	2	25
N.C.	1	13	-	3	130	2	98	-	22	-	-	5	46
S.C.	-	2	-	2	159	-	85	1	18	-	-	8	57
Ga.	-	8	-	111	826	-	107	-	38	-	-	37	-
Fla.	2	42	9	314	414	6	217	-	122	-	2	59	100
E.S. CENTRAL	-	11	-	5	331	9	210	2	89	-	1	37	85
Ky.	-	-	-	1	55	3	61	1	43	-	1	23	40
Tenn.	-	-	-	2	170	3	59	-	23	-	-	13	40
Ala.	-	9	-	2	22	3	65	-	18	-	-	1	3
Miss.	-	2	-	-	84	-	25	1	5	-	-	-	2
W.S. CENTRAL	1	92	3	891	958	3	455	3	219	3	3	172	135
Ark.	-	4	-	23	16	-	26	-	6	-	-	3	4
La.	-	8	-	4	12	-	109	-	5	1	-	9	12
Okla.	-	6	-	7	775	-	41	-	-	-	-	2	6
Tex.	1	74	3	857	155	3	279	3	208	2	3	158	113
MOUNTAIN	-	41	-	35	474	-	119	2	129	1	-	92	158
Mont.	-	1	-	-	2	-	9	1	12	-	-	4	45
Idaho	-	4	-	1	-	-	6	-	6	-	-	3	23
Wyo.	-	-	-	1	-	-	2	-	1	-	-	12	1
Colo.	-	19	-	10	24	-	43	1	46	1	-	27	12
N. Mex.	-	3	-	8	12	-	7	-	-	-	-	5	5
Ariz.	U	7	U	5	380	U	20	U	32	U	U	21	38
Utah	-	4	-	-	47	-	5	-	18	-	-	8	28
Nev.	-	3	-	10	9	-	27	-	14	-	-	12	6
PACIFIC	12	585	2	381	1,101	1	366	15	648	1	2	620	940
Wash.	-	25	-	3	177	-	64	2	151	-	1	91	84
Oreg.	-	15	-	5	-	-	51	1	65	-	-	51	62
Calif.	12	533	2	366	912	1	235	10	393	1	1	466	778
Alaska	-	3	-	-	6	-	12	2	17	-	-	1	12
Hawaii	-	9	-	7	6	-	4	-	22	-	-	11	4
Guam	U	2	U	5	6	U	-	U	7	U	U	1	2
P.R.	-	11	3	289	161	-	12	2	145	-	-	4	23
V.I.	-	4	-	25	6	-	1	-	5	-	-	1	-
Pac. Trust Terr.	U	-	U	1	12	U	-	U	15	U	U	1	1

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending November 7, 1981 and November 1, 1980 (44th week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULA- REMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES Animal
	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	26,036	22,938	547	23,048	222	10	509	12	1,145	6,282
NEW ENGLAND	506	442	26	670	5	-	16	-	9	39
Maine	5	5	1	44	-	-	1	-	-	13
N.H.	11	6	-	19	-	-	-	-	-	7
Vt.	16	6	2	23	1	-	-	-	-	-
Mass.	322	261	20	389	3	-	8	-	5	11
R.I.	30	29	1	47	-	-	-	-	2	2
Conn.	122	135	2	148	1	-	7	-	2	6
MID. ATLANTIC	3,714	3,153	81	3,580	10	2	78	1	41	108
Upstate N.Y.	331	273	9	601	10	-	13	-	14	75
N.Y. City	2,222	2,040	40	1,367	-	1	43	-	3	-
N.J.	525	379	11	760	-	-	13	1	11	23
Pa.	636	461	21	852	-	1	9	-	13	10
E.N. CENTRAL	1,881	2,248	91	3,150	5	1	38	3	52	958
Ohio	265	316	13	567	-	-	10	-	39	65
Ind.	260	165	7	356	4	-	3	3	6	86
Ill.	956	1,352	52	1,290	-	-	15	-	6	509
Mich.	323	333	16	775	1	1	8	-	1	14
Wis.	77	82	3	162	-	-	2	-	-	284
W.N. CENTRAL	571	299	17	784	33	-	18	3	53	2,445
Minn.	173	99	3	134	-	-	2	-	2	432
Iowa	24	23	-	71	-	-	3	-	7	793
Mo.	323	139	10	364	27	-	8	3	29	221
N. Dak.	9	4	-	30	-	-	-	-	-	340
S. Dak.	2	5	2	58	1	-	1	-	-	295
Nebr.	9	8	-	25	3	-	2	-	3	180
Kans.	31	21	2	102	2	-	2	-	12	184
S. ATLANTIC	6,988	5,538	97	4,908	13	-	60	3	650	552
Del.	13	19	4	56	1	-	-	-	3	1
Md.	506	383	13	500	-	-	14	-	59	46
D.C.	565	415	2	290	-	-	1	-	1	-
Va.	600	494	-	488	3	-	1	-	105	120
W. Va.	23	16	3	157	-	-	6	-	6	30
N.C.	556	415	21	872	2	-	5	2	289	18
S.C.	482	323	16	463	3	-	1	-	102	42
Ga.	1,714	1,576	17	814	4	-	4	1	75	204
Fla.	2,529	1,897	21	1,268	-	-	28	-	10	91
E.S. CENTRAL	1,697	1,889	55	2,072	10	1	10	1	133	420
Ky.	82	117	13	509	3	1	1	-	2	116
Tenn.	613	790	18	692	7	-	3	-	82	200
Ala.	511	414	9	561	-	-	4	1	22	100
Miss.	491	568	15	310	-	-	2	-	27	4
W.S. CENTRAL	6,305	4,647	52	2,613	100	4	129	1	171	989
Ark.	133	191	8	291	52	-	4	1	39	140
La.	1,432	1,164	19	476	5	-	2	-	1	33
Okla.	150	92	-	272	4	-	4	-	95	194
Tex.	4,590	3,200	25	1,574	16	4	119	-	36	622
MOUNTAIN	644	552	10	623	36	-	23	-	28	240
Mont.	11	2	-	30	5	-	4	-	12	112
Idaho	18	16	1	10	4	-	-	-	5	7
Wyo.	16	11	1	11	1	-	-	-	5	17
Colo.	192	148	2	73	9	-	8	-	1	35
N. Mex.	112	96	5	124	3	-	-	-	-	27
Ariz.	158	190	0	283	-	0	10	0	-	25
Utah	25	13	-	50	13	-	1	-	2	11
Nev.	112	76	1	42	1	-	-	-	3	6
PACIFIC	3,730	4,170	118	4,648	10	2	137	-	8	531
Wash.	158	216	11	327	1	-	3	-	1	15
Oreg.	100	96	2	157	1	-	4	-	-	10
Calif.	3,398	3,714	92	3,941	8	2	126	-	7	486
Alaska	12	8	-	61	-	-	-	-	-	20
Hawaii	62	136	13	162	-	-	4	-	-	-
Guam	-	5	0	30	-	0	-	0	-	-
P.R.	554	520	8	422	-	-	4	-	-	73
V.I.	18	10	-	1	-	-	6	-	-	-
Pac. Trust Terr.	-	-	0	49	-	0	-	0	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending
November 7, 1981 (44th 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	1-24	<1			ALL AGES	≥65	45-64	25-44	1-24	<1		
NEW ENGLAND	643	449	120	32	13	29	54	S. ATLANTIC	1,174	723	273	95	33	50	42	
Boston, Mass.	173	107	41	10	7	8	17	Atlanta, Ga.	150	96	29	15	2	8	1	
Bridgeport, Conn.	39	32	6	-	1	-	6	Baltimore, Md.	207	132	48	17	5	5	6	
Cambridge, Mass.	27	20	5	2	-	-	2	Charlotte, N.C.	48	28	14	4	2	-	4	
Fall River, Mass.	24	18	6	-	-	-	-	Jacksonville, Fla.	85	55	20	8	1	1	6	
Hartford, Conn.	69	45	16	6	-	2	2	Miami, Fla.	135	79	34	9	6	7	2	
Lowell, Mass.	30	24	4	1	-	1	2	Norfolk, Va.	52	33	14	-	2	3	3	
Lynn, Mass.	12	9	2	1	-	-	-	Richmond, Va.	84	53	24	3	3	1	7	
New Bedford, Mass.	28	24	1	2	1	-	1	Savannah, Ga.	36	22	9	2	1	2	2	
New Haven, Conn.	52	21	10	5	-	16	3	St. Petersburg, Fla.	91	68	13	3	2	5	4	
Providence, R.I. §	43	43	-	-	-	-	1	Tampa, Fla.	59	37	13	7	1	1	2	
Somerville, Mass.	5	4	1	-	-	-	2	Washington, D.C.	183	95	42	24	7	15	3	
Springfield, Mass.	49	37	8	2	-	2	4	Wilmington, Del.	44	25	13	3	1	2	2	
Waterbury, Conn.	24	16	6	-	2	-	6									
Worcester, Mass.	68	49	14	3	2	-	8									
								E.S. CENTRAL	654	390	175	34	22	33	24	
MID. ATLANTIC	2,620	1,693	597	184	71	75	123	Birmingham, Ala.	124	66	39	4	3	12	-	
Albany, N.Y.	58	36	13	4	2	3	1	Chattanooga, Tenn.	58	31	20	4	1	2	2	
Allentown, Pa.	23	18	5	-	-	-	-	Knoxville, Tenn.	39	29	7	2	-	1	1	
Buffalo, N.Y.	150	91	36	8	6	9	13	Louisville, Ky.	87	49	22	1	5	10	6	
Camden, N.J.	29	20	7	-	1	1	3	Memphis, Tenn.	150	95	38	11	6	-	7	
Elizabeth, N.J.	27	20	5	2	-	-	-	Mobile, Ala.	62	38	14	5	3	2	1	
Erie, Pa. †	38	22	10	3	2	1	3	Montgomery, Ala.	40	20	14	5	1	-	3	
Jersey City, N.J.	45	31	9	4	-	1	1	Nashville, Tenn.	94	62	21	2	3	6	4	
N.Y. City, N.Y.	1,357	870	309	102	43	33	53									
Newark, N.J.	40	20	13	3	2	2	1	W.S. CENTRAL	1,124	642	259	108	55	60	38	
Paterson, N.J.	37	21	6	3	2	5	-	Austin, Tex.	39	25	9	3	1	1	-	
Philadelphia, Pa. †	327	190	85	34	6	12	18	Baton Rouge, La.	26	13	6	4	1	2	-	
Pittsburgh, Pa. †	125	83	28	8	3	3	2	Corpus Christi, Tex.	42	28	11	2	1	-	-	
Reading, Pa.	36	27	6	1	2	-	-	Dallas, Tex.	203	108	54	22	7	12	3	
Rochester, N.Y.	130	93	25	7	-	5	20	El Paso, Tex.	60	39	9	5	4	3	3	
Schenectady, N.Y.	30	22	5	1	2	-	-	Fort Worth, Tex.	78	45	19	9	5	-	3	
Scranton, Pa. †	29	17	10	2	-	-	1	Houston, Tex.	236	115	48	28	18	27	1	
Syracuse, N.Y.	56	45	11	-	-	-	1	Little Rock, Ark.	69	50	14	3	1	1	5	
Trenton, N.J.	37	29	7	1	-	-	1	New Orleans, La.	102	66	19	14	3	-	3	
Utica, N.Y.	20	16	3	1	-	-	1	San Antonio, Tex.	137	79	34	9	7	8	15	
Yonkers, N.Y.	26	22	4	-	-	-	3	Shreveport, La.	47	23	15	3	2	4	-	
								Tulsa, Okla.	85	51	21	6	5	2	5	
E.N. CENTRAL	2,340	1,438	581	138	62	121	58	MOUNTAIN	659	407	143	47	32	30	34	
Akron, Ohio	81	56	17	-	2	6	-	Albuquerque, N. Mex.	60	36	14	3	5	2	8	
Canton, Ohio	50	35	10	3	-	2	2	Colo. Springs, Colo.	35	27	4	2	-	2	-	
Chicago, Ill.	527	311	120	41	24	31	5	Denver, Colo.	128	76	32	8	5	7	9	
Cincinnati, Ohio	164	101	43	12	3	5	10	Las Vegas, Nev.	80	40	22	8	7	3	1	
Cleveland, Ohio	130	79	30	5	3	13	2	Ogden, Utah	21	12	4	1	1	3	1	
Columbus, Ohio	177	90	56	13	-	18	1	Phoenix, Ariz.	160	104	31	13	6	6	5	
Dayton, Ohio	115	67	38	4	1	5	3	Pueblo, Colo.	19	12	5	1	-	1	-	
Detroit, Mich.	271	156	80	21	5	9	4	Salt Lake City, Utah	49	27	10	5	3	4	-	
Evanston, Ill.	49	28	19	-	1	1	-	Tucson, Ariz.	107	73	21	6	5	2	10	
Fort Wayne, Ind.	50	37	10	1	2	-	5									
Gary, Ind.	27	10	8	5	1	3	-									
Grand Rapids, Mich.	52	33	15	2	-	2	1	PACIFIC	1,748	1,169	334	110	60	72	73	
Indianapolis, Ind.	169	106	38	10	5	10	6	Berkeley, Calif.	22	14	5	2	-	1	1	
Madison, Wis.	34	20	9	2	1	2	8	Fresno, Calif.	57	35	15	1	5	1	4	
Milwaukee, Wis.	140	92	31	3	6	8	-	Glendale, Calif.	30	26	2	2	-	-	-	
Peoria, Ill.	40	29	10	-	1	-	4	Honolulu, Hawaii	51	35	12	1	2	1	7	
Rockford, Ill.	31	22	7	1	1	-	1	Long Beach, Calif.	65	44	16	5	-	-	2	
South Bend, Ind.	43	30	5	3	3	2	1	Los Angeles, Calif.	544	355	112	41	22	14	14	
Toledo, Ohio	124	90	23	5	3	3	4	Oakland, Calif.	94	54	21	7	4	8	4	
Youngstown, Ohio	66	46	12	7	-	1	1	Pasadena, Calif.	27	19	5	2	1	-	3	
								Portland, Oreg.	113	74	25	7	3	4	-	
W.N. CENTRAL	709	461	156	37	26	29	28	Sacramento, Calif.	68	47	13	6	-	2	6	
Des Moines, Iowa	51	37	10	1	1	2	3	San Diego, Calif. §	140	118	3	4	5	7	4	
Duluth, Minn.	16	14	1	-	-	1	3	San Francisco, Calif.	140	90	32	11	4	3	7	
Kansas City, Kans.	25	10	7	4	3	1	1	San Jose, Calif.	154	105	27	9	8	5	12	
Kansas City, Mo.	110	66	32	6	-	6	5	Seattle, Wash.	144	86	26	7	6	19	1	
Lincoln, Neb.	47	36	8	1	2	-	3	Spokane, Wash.	51	36	12	2	-	1	2	
Minneapolis, Minn.	72	46	14	8	3	1	3	Tacoma, Wash.	48	31	8	3	-	6	6	
Omaha, Neb.	97	55	31	4	3	4	2									
St. Louis, Mo.	168	113	30	8	10	7	-									
St. Paul, Minn.	58	44	10	2	1	1	1	TOTAL	11,671 ^{††}	7,372	2,638	785	374	499	474	
Wichita, Kans.	65	40	13	3	3	6	7									

*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 the past 4 weeks.

Measles — Continued

All 7 children in this school exempted from measles vaccination for religious reasons developed measles.

Ohio: A total of 14 confirmed cases of measles, with onset of rash from December 30, 1980, through February 11, 1981, occurred in an outbreak in Austintown, Ohio (Figure 2). The index patient was a 2-1/2-year-old girl from another state who became ill while in Ohio. Because of family religious beliefs, this child had not been vaccinated. Subsequently, 4 children in the family she visited, not vaccinated for the same reason, had measles. Two of these children introduced measles into a middle school. Additional cases included 3 children who were exempted from measles vaccination because of religious beliefs (2 preschoolers and 1 middle-school student) and a school teacher. Of the 13 children with confirmed measles in this outbreak, 8 were not vaccinated because of family religious beliefs.

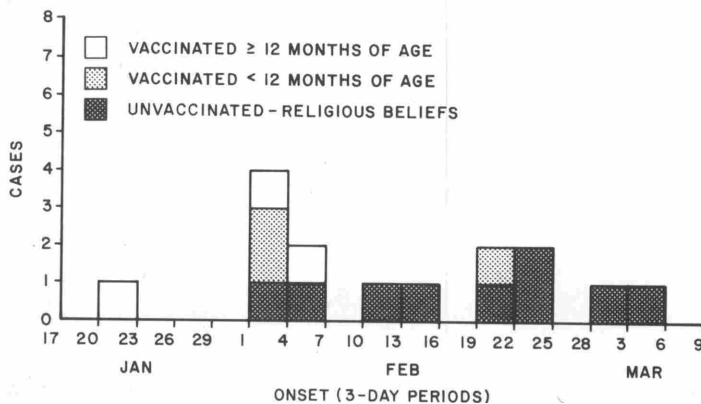
Of the 1,127 students enrolled at the middle school, 1,111 (98.6%) had acceptable evidence of immunity to measles; 11 (1.0%) had had measles vaccination before they were 12 months of age, 3 (0.3%) had religious exemptions to vaccination, and 2 (0.2%) had no record of measles vaccination or illness. Of the 1,111 children with acceptable evidence, 5 developed measles (attack rate of 0.5%). All 3 children with religious exemptions to vaccination developed measles.

Reported by A Johnson, RN, G Rudisch, MD, MPH, Brookline Health Dept, P Etkind, MPH, L Dibble, RN, NJ Fiumara, MD, MPH, State Epidemiologist, Massachusetts Dept of Public Health; MH Valot Jr, B Lunn, RN, Austintown Local School District, DA Walsh, DO, JM Price, RN, Mahoning County Health Dept, Youngstown, KM Sullivan, JE Sommer, CB Compton, TJ Halpin, MD, MPH, State Epidemiologist, Ohio State Dept of Health; Field Svcs Div, Epidemiology Program Office, Immunization Div, Center for Prevention Svcs, CDC.

Editorial Note: Previous outbreaks of vaccine-preventable illness have been described among religious groups (1-5). Those outbreaks and the 2 outbreaks described here indicate that while children who are unvaccinated because of religious exemptions comprise a small proportion of the population, they are at increased risk of acquiring vaccine-preventable disease and may be important in sustaining transmission. In Massachusetts, children with religious exemptions sustained an outbreak of measles for 3 generations of the disease. In Ohio, children with religious exemptions exposed vaccinated classmates, some of whom became ill, as did an unvaccinated teacher. However, in both outbreaks, transmission was limited because a high percentage of students in the schools were immune.

All 50 states and the District of Columbia have enacted school immunization laws (6) that allow exemption to vaccination on the basis of religious convictions. Vigorous application of school immunization laws is a key element in eliminating measles (7). School children who

FIGURE 1. Reported measles cases, by onset of rash, Brookline, Massachusetts, January 22-March 6, 1981



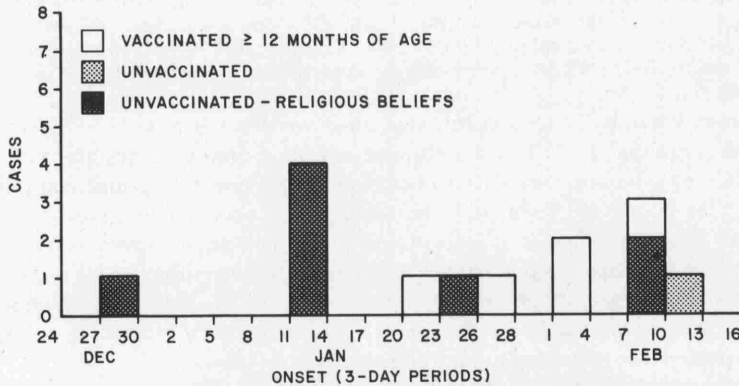
Measles - Continued

are not vaccinated because of religious beliefs, medical contraindications to vaccination, or other reasons should be considered susceptible to measles. In epidemic settings, they have much higher attack rates than do vaccinated children. The Immunization Practices Advisory Committee (ACIP) recommends that students exempted from immunization requirements not attend school during outbreaks of measles in order to protect their health and to minimize transmission in the community (8).

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8. ACIP. Measles prevention. MMWR 1978;27:427-30, 435-7.

FIGURE 2. Reported measles cases, by onset of rash, Austintown, Ohio, December 30, 1980-February 11, 1981



☆U.S. Government Printing Office: 1981-740-185/920 Region IV

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TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending
November 7, 1981 and November 1, 1980 (44th week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULA- REMA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES, Animal
	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981
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N.H.	11	6	-	19	-	-	-	-	-	7
Vt.	16	6	2	23	1	-	-	-	-	-
Mass.	322	261	20	389	3	-	8	-	5	11
R.I.	30	29	1	47	-	-	-	-	2	2
Conn.	122	135	2	148	1	-	7	-	2	6
MID. ATLANTIC	3,714	3,153	81	3,580	10	2	78	1	41	108
Upstate N.Y.	331	273	9	601	10	-	13	-	14	75
N.Y. City	2,222	2,040	40	1,367	-	1	43	-	3	-
N.J.	525	379	11	760	-	-	13	1	11	23
Pa.	636	461	21	852	-	1	9	-	13	10
E.N. CENTRAL	1,881	2,248	91	3,150	5	1	38	3	52	958
Ohio	265	316	13	567	-	-	10	-	39	65
Ind.	260	165	7	356	4	-	3	3	6	86
Ill.	956	1,352	52	1,290	-	-	15	-	6	509
Mich.	323	333	16	775	1	1	8	-	1	14
Wis.	77	82	3	162	-	-	2	-	-	284
W.N. CENTRAL	571	299	17	784	33	-	18	3	53	2,445
Minn.	173	99	3	134	-	-	2	-	2	432
Iowa	24	23	-	71	-	-	3	-	7	793
Mo.	323	139	10	364	27	-	8	3	29	221
N. Dak.	9	4	-	30	-	-	-	-	-	340
S. Dak.	2	5	2	58	1	-	1	-	-	295
Nebr.	9	8	-	25	3	-	2	-	3	180
Kans.	31	21	2	102	2	-	2	-	12	184
S. ATLANTIC	6,988	5,538	97	4,908	13	-	60	3	650	552
Del.	13	19	4	56	1	-	-	-	3	1
Md.	506	383	13	500	-	-	14	-	59	46
D.C.	565	415	2	290	-	-	1	-	1	-
Va.	600	494	-	488	3	-	1	-	105	120
W. Va.	23	16	3	157	-	-	6	-	6	30
N.C.	556	415	21	872	2	-	5	2	289	18
S.C.	482	323	16	463	3	-	1	-	102	42
Ga.	1,714	1,576	17	814	4	-	4	1	75	204
Fla.	2,529	1,897	21	1,268	-	-	28	-	10	91
E.S. CENTRAL	1,697	1,889	55	2,072	10	1	10	1	133	420
Ky.	82	117	13	509	3	1	1	-	2	116
Tenn.	613	790	18	692	7	-	3	-	82	200
Ala.	511	414	9	561	4	-	4	1	22	100
Miss.	491	568	15	310	-	-	2	-	27	4
W.S. CENTRAL	6,305	4,647	52	2,613	100	4	129	1	171	989
Ark.	133	191	8	291	52	-	4	1	39	140
La.	1,432	1,164	19	476	5	-	2	-	1	33
Okla.	150	92	-	272	27	-	4	-	95	194
Tex.	4,590	3,200	25	1,574	16	4	119	-	36	622
MOUNTAIN	644	552	10	623	36	-	23	-	28	240
Mont.	11	2	-	30	5	-	4	-	12	17
Idaho	18	16	1	10	4	-	-	-	5	7
Wyo.	16	11	1	11	1	-	-	-	5	17
Colo.	192	148	2	73	9	-	8	-	1	35
N. Mex.	112	96	5	124	3	-	-	-	-	25
Ariz.	158	190	0	283	-	0	10	0	-	25
Utah	25	13	-	50	13	-	1	-	2	11
Nev.	112	76	1	42	1	-	-	-	3	6
PACIFIC	3,730	4,170	118	4,648	10	2	137	-	8	531
Wash.	158	216	11	327	1	-	3	-	1	15
Oreg.	100	96	2	157	1	-	4	-	-	10
Calif.	3,398	3,714	92	3,941	8	2	126	-	7	486
Alaska	12	8	-	61	-	-	-	-	-	20
Hawaii	62	136	13	162	-	-	4	-	-	-
Guam	-	5	U	30	-	U	-	U	-	-
P.R.	554	520	8	422	-	-	4	-	-	73
V.I.	18	10	-	1	-	-	6	-	-	-
Pac. Trust Terr.	-	-	U	49	-	U	-	U	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending
November 7, 1981 (44th 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	1-24	<1			ALL AGES	≥65	45-64	25-44	1-24	<1		
NEW ENGLAND	643	449	120	32	13	29	54	S. ATLANTIC	1,174	723	273	95	33	50	42	
Boston, Mass.	173	107	41	10	7	8	17	Atlanta, Ga.	150	96	29	15	2	8	1	
Bridgeport, Conn.	39	32	6	-	1	-	6	Baltimore, Md.	207	132	48	17	5	5	6	
Cambridge, Mass.	27	20	5	2	-	-	2	Charlotte, N.C.	48	28	14	4	2	-	4	
Fall River, Mass.	24	18	6	-	-	-	-	Jacksonville, Fla.	85	55	20	8	1	1	6	
Hartford, Conn.	69	45	16	6	-	2	2	Miami, Fla.	135	79	34	9	6	7	2	
Lowell, Mass.	30	24	4	1	-	1	2	Norfolk, Va.	52	33	14	-	2	3	3	
Lynn, Mass.	12	9	2	1	-	-	-	Richmond, Va.	84	53	24	3	3	1	7	
New Bedford, Mass.	28	24	1	2	1	-	1	Savannah, Ga.	36	22	9	2	1	2	2	
New Haven, Conn.	52	21	10	5	-	16	3	St. Petersburg, Fla.	91	68	13	3	2	5	4	
Providence, R.I. §	43	43	-	-	-	-	1	Tampa, Fla.	59	37	13	7	1	1	2	
Springfield, Mass.	5	4	1	-	-	-	2	Washington, D.C.	183	95	42	24	7	15	3	
Waterbury, Conn.	24	16	6	-	2	-	6	Wilmington, Del.	44	25	13	3	1	2	2	
Worcester, Mass.	68	49	14	3	2	-	8									
								E.S. CENTRAL	654	390	175	34	22	33	24	
MID. ATLANTIC	2,620	1,693	597	184	71	75	123	Birmingham, Ala.	124	66	39	4	3	12	-	
Albany, N.Y.	58	36	13	4	2	3	1	Chattanooga, Tenn.	58	31	20	4	1	2	2	
Allentown, Pa.	23	18	5	-	-	-	-	Knoxville, Tenn.	39	29	7	2	-	1	1	
Buffalo, N.Y.	150	91	36	8	6	9	13	Louisville, Ky.	87	49	22	1	5	10	6	
Camden, N.J.	29	20	7	-	1	1	3	Memphis, Tenn.	150	95	38	11	6	-	7	
Elizabeth, N.J.	27	20	5	2	-	-	-	Mobile, Ala.	62	38	14	5	3	2	1	
Erie, Pa. †	38	22	10	3	2	1	3	Montgomery, Ala.	40	20	14	5	1	-	3	
Jersey City, N.J.	45	31	9	4	-	1	1	Nashville, Tenn.	94	62	21	2	3	6	4	
N.Y. City, N.Y.	1,357	870	309	102	43	33	53									
Newark, N.J.	40	20	13	3	2	2	5	W.S. CENTRAL	1,124	642	259	108	55	60	38	
Paterson, N.J.	37	21	6	3	2	5	-	Austin, Tex.	39	25	9	3	1	1	-	
Philadelphia, Pa. †	327	190	85	34	6	12	18	Baton Rouge, La.	26	13	6	4	1	2	-	
Pittsburgh, Pa. †	125	83	28	8	3	3	2	Corpus Christi, Tex.	42	28	11	2	1	-	-	
Reading, Pa.	36	27	6	1	2	-	-	Dallas, Tex.	203	108	54	22	7	12	3	
Rochester, N.Y.	130	93	25	7	-	5	20	El Paso, Tex.	60	39	9	5	4	3	3	
Schenectady, N.Y.	30	22	5	1	2	-	1	Fort Worth, Tex.	78	45	19	9	5	-	3	
Scranton, Pa. †	29	17	10	2	-	-	1	Houston, Tex.	236	115	48	28	18	27	1	
Syracuse, N.Y.	56	45	11	-	-	-	1	Little Rock, Ark.	69	50	14	3	1	1	5	
Trenton, N.J.	37	29	7	1	-	-	1	New Orleans, La.	102	66	19	14	3	-	3	
Utica, N.Y.	20	16	3	1	-	-	1	San Antonio, Tex.	137	79	34	9	7	8	15	
Yonkers, N.Y.	26	22	4	-	-	-	3	Shreveport, La.	47	23	15	3	2	4	-	
								Tulsa, Okla.	85	51	21	6	5	2	5	
E.N. CENTRAL	2,340	1,438	581	138	62	121	58	MOUNTAIN	659	407	143	47	32	30	34	
Akron, Ohio	81	56	17	-	2	6	-	Albuquerque, N. Mex.	60	36	14	3	5	2	8	
Canton, Ohio	50	35	10	3	-	2	2	Colo. Springs, Colo.	35	27	4	2	-	2	-	
Chicago, Ill.	527	311	120	41	24	31	5	Denver, Colo.	128	76	32	8	5	7	9	
Cincinnati, Ohio	164	101	43	12	3	5	10	Las Vegas, Nev.	80	40	22	8	7	3	1	
Cleveland, Ohio	130	79	30	5	3	13	2	Ogden, Utah	21	12	4	1	1	3	1	
Columbus, Ohio	115	67	38	4	1	5	3	Phoenix, Ariz.	160	104	31	13	6	6	5	
Dayton, Ohio	271	156	80	21	5	9	4	Pueblo, Colo.	19	12	5	1	-	1	-	
Detroit, Mich.	49	28	19	-	1	1	-	Salt Lake City, Utah	49	27	10	5	3	4	-	
Evansville, Ind.	50	37	10	1	2	-	5	Tucson, Ariz.	107	73	21	6	5	2	10	
Fort Wayne, Ind.	27	10	8	5	1	3	-									
Gary, Ind.	52	33	15	2	-	2	1	PACIFIC	1,748	1,169	334	110	60	72	73	
Grand Rapids, Mich.	52	33	15	2	-	2	1	Berkeley, Calif.	22	14	5	2	-	1	1	
Indianapolis, Ind.	169	106	38	10	5	10	6	Fresno, Calif.	57	35	15	1	5	1	4	
Madison, Wis.	34	20	9	2	1	2	8	Glendale, Calif.	30	26	2	2	-	-	-	
Milwaukee, Wis.	140	92	31	3	6	8	-	Honolulu, Hawaii	51	35	12	1	2	1	7	
Peoria, Ill.	40	29	10	-	1	-	4	Long Beach, Calif.	65	44	16	5	-	-	2	
Rockford, Ill.	31	22	7	1	1	-	1	Los Angeles, Calif.	544	355	112	41	22	14	14	
South Bend, Ind.	43	30	5	3	3	2	1	Oakland, Calif.	94	54	21	7	4	8	4	
Toledo, Ohio	124	90	23	5	3	3	4	Pasadena, Calif.	27	19	5	2	1	-	3	
Youngstown, Ohio	66	46	12	7	-	1	1	Portland, Ore.	113	74	25	7	3	4	-	
								Sacramento, Calif.	68	47	13	6	-	2	6	
W.N. CENTRAL	709	461	156	37	26	29	28	San Diego, Calif. §	140	118	3	4	5	7	4	
Des Moines, Iowa	51	37	10	1	1	2	3	San Francisco, Calif.	140	90	32	11	4	3	7	
Duluth, Minn.	16	14	1	-	-	1	3	San Jose, Calif.	154	105	27	9	8	5	12	
Kansas City, Kans.	25	10	7	4	3	1	1	Seattle, Wash.	144	86	26	7	6	19	1	
Kansas City, Mo.	110	66	32	6	-	6	5	Spokane, Wash.	51	36	12	2	-	1	2	
Lincoln, Nebr.	47	36	8	1	2	-	3	Tacoma, Wash.	48	31	8	3	-	6	6	
Minneapolis, Minn.	72	46	14	8	3	1	3									
Omaha, Nebr.	97	55	31	4	3	4	2									
St. Louis, Mo.	168	113	30	8	10	7	-									
St. Paul, Minn.	58	44	10	2	1	1	1	TOTAL	11,671 ^{††}	7,372	2,638	785	374	499	474	
Wichita, Kans.	65	40	13	3	3	6	7									

*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. Fatal 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 the past 4 weeks.

*Measles — Continued*

All 7 children in this school exempted from measles vaccination for religious reasons developed measles.

Ohio: A total of 14 confirmed cases of measles, with onset of rash from December 30, 1980, through February 11, 1981, occurred in an outbreak in Austintown, Ohio (Figure 2). The index patient was a 2-1/2-year-old girl from another state who became ill while in Ohio. Because of family religious beliefs, this child had not been vaccinated. Subsequently, 4 children in the family she visited, not vaccinated for the same reason, had measles. Two of these children introduced measles into a middle school. Additional cases included 3 children who were exempted from measles vaccination because of religious beliefs (2 preschoolers and 1 middle-school student) and a school teacher. Of the 13 children with confirmed measles in this outbreak, 8 were not vaccinated because of family religious beliefs.

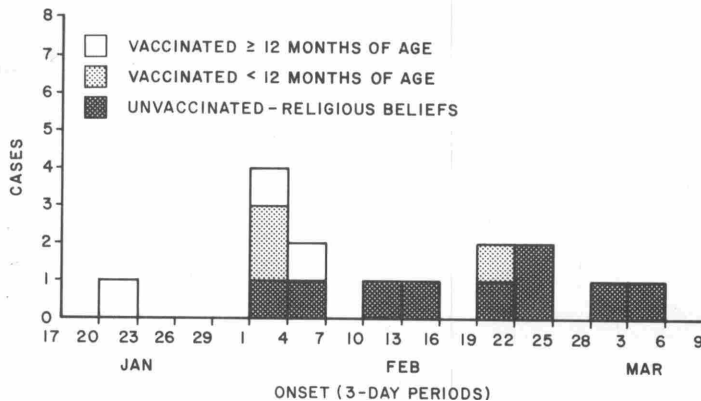
Of the 1,127 students enrolled at the middle school, 1,111 (98.6%) had acceptable evidence of immunity to measles; 11 (1.0%) had had measles vaccination before they were 12 months old, 3 (0.3%) had religious exemptions to vaccination, and 2 (0.2%) had no record of measles vaccination or illness. Of the 1,111 children with acceptable evidence, 5 developed measles (attack rate of 0.5%). All 3 children with religious exemptions to vaccination developed measles.

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Editorial Note: Previous outbreaks of vaccine-preventable illness have been described among religious groups (1-5). Those outbreaks and the 2 outbreaks described here indicate that while children who are unvaccinated because of religious exemptions comprise a small proportion of the population, they are at increased risk of acquiring vaccine-preventable disease and may be important in sustaining transmission. In Massachusetts, children with religious exemptions sustained an outbreak of measles for 3 generations of the disease. In Ohio, children with religious exemptions exposed vaccinated classmates, some of whom became ill, as did an unvaccinated teacher. However, in both outbreaks, transmission was limited because a high percentage of students in the schools were immune.

All 50 states and the District of Columbia have enacted school immunization laws (6) that allow exemption to vaccination on the basis of religious convictions. Vigorous application of school immunization laws is a key element in eliminating measles (7). School children who

FIGURE 1. Reported measles cases, by onset of rash, Brookline, Massachusetts, January 22-March 6, 1981



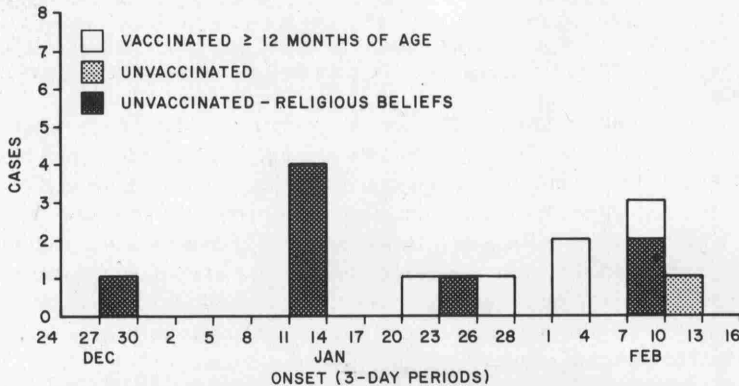
Measles — Continued

are not vaccinated because of religious beliefs, medical contraindications to vaccination, or other reasons should be considered susceptible to measles. In epidemic settings, they have much higher attack rates than do vaccinated children. The Immunization Practices Advisory Committee (ACIP) recommends that students exempted from immunization requirements not attend school during outbreaks of measles in order to protect their health and to minimize transmission in the community (8).

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FIGURE 2. Reported measles cases, by onset of rash, Austintown, Ohio, December 30, 1980-February 11, 1981



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