

# M M W R

## MORBIDITY AND MORTALITY WEEKLY REPORT

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### *Epidemiologic Notes and Reports*

#### **Outbreak of Measles Following an Imported Case — Florida**

As of December 13, 1982, 203 confirmed cases of measles, with rash onsets from September 10 through December 3, were reported from Dade County, Florida. Three additional cases in Florida were linked to the outbreak.

The source of the outbreak was an imported case\* in a 14-year-old male resident of Dade County, who lacked documentation of immunity to measles.† He had vacationed in Peru from July 31 to August 31. From August 24 to 26, he had face-to-face contact with a cousin in Peru who had fever and a generalized maculopapular rash. After returning to the United States, he attended Junior High School A from September 1 until rash onset on September 10. He transmitted measles to seven students at Junior High School A, all of whom lacked documentation of measles immunity. They had rash onsets from September 20 through September 27. This led to a county-wide outbreak concentrated primarily in school children (Figure 1).

The highest attack rate, 3.9%, occurred in Junior High School A, which accounted for 73 (36.0%) of the 203 cases. The outbreak was concentrated in Junior High School A from September 10 through October 12 (Figure 1). However, by October 28, measles cases were reported in 11 additional schools, geographically widespread across the county. Ultimately, measles cases occurred in 32 of 186 schools in south Dade County and in 25 of 270 schools in north Dade County. In addition, four day care centers, one community college, and one military school were affected.

As part of the response to the outbreak, local authorities ordered a review of immunization records of all students in public and private schools in Dade County; 286,000 immunization records were reviewed to identify all students who had inadequate evidence of immunity to measles. Initially, susceptible students were excluded from those schools in which there were measles cases. On October 28, a county-wide measles emergency was declared by the County Health Director permitting non-compliant students, including those with medical or religious exemptions to vaccination, to be excluded from school attendance beginning on November 8 in south Dade County, and on November 22 in north Dade County. Specially assigned State Immunization Program staff joined county health personnel to review records and to administer vaccines. No measles cases were reported among non-compliant students more than 9 days after the school exclusion day.

After control measures were implemented, changes occurred in the age distribution and

\*Imported measles: measles illness in a person (U.S. citizen or foreign national) who has onset of rash within 18 days of arrival from a foreign country, and for which no indigenous source can be identified.

†Immunity to measles: defined by the State of Florida as a dated record showing administration of measles vaccine on or after the first birthday and on or after January 1, 1968, or written certification of previous physician-diagnosed measles illness.

*Measles — Continued*

measles immunity status of reported cases. From September 10 through October 15 (the date the immunization clinic was held in Junior High School A), 54 (85.7%) of 63 measles cases occurred among students aged 10-14 years, whereas 18 (20.5%) of 88 cases occurred in that age group with rash onsets from October 28 through December 3 (Table 1). In Junior High School A, all nine cases with rash onset from September 10 through October 3 were classified as preventable.<sup>§</sup> However, no preventable cases were reported in Junior High School A one incubation period after the control clinic.

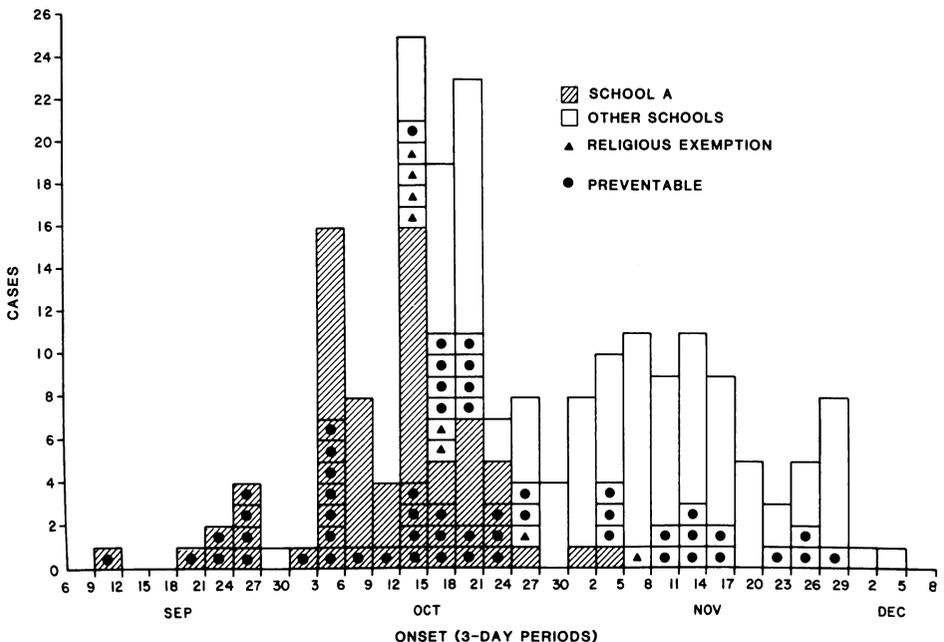
Overall, 55 (27.1%) of 203 cases are classified as preventable; 42 persons (20.7%) lacked documentation of immunity to measles (24 of whom were vaccinated before the first birthday), and 13 (6.4%) had been vaccinated less than 2 weeks before rash onset. Of the 148 (72.9%) cases classified as not preventable, 110 persons (54.2%) had physician-signed records of immunity to measles,<sup>†</sup> 18 (8.9%) were less than 16 months old, 12 (5.9%) were born before 1957, and 8 (3.9%) had religious exemptions to vaccination.

*Reported by: RA Morgan, MD, MP Allison, MT Brown, MD, MB Enriquez, MD, O Fajardo, RE Foden, HO Garcia, MD, S Jones, AC Kimbler, D Kumjian, C Link, P Onley, A Marler, ZB Reece, Dade County Dept of Public Health, PW Bell, RF Adams, BJ Lisko, Dade County Public Schools, Miami, TL Cook, RW Curtiss, BJ Downs, SH King, MD, DL Roach, MB Rothman, JA Spencer, SM White, NS Windham, JL Velez, J Youngblood, JJ Sacks, MD, Acting State Epidemiologist, Florida Dept of Health and Rehabilitative Svcs; Immunization Div, Center for Prevention Svcs, CDC.*

**Editorial Note:** This outbreak resulted from an imported measles case in a U.S. citizen who transmitted infection to seven other students in a junior high school. All eight cases were preventable; none of the eight had documentation of immunity to measles, although five had received vaccine before 12 months of age. An earlier imported case had occurred while

<sup>§</sup>Preventable case: defined by the State of Florida as measles illness in a person more than 15 months old and born after 1956 who lacks documentation of immunity to measles, and has no contraindication or religious exemption to receiving vaccine.

**FIGURE 1. Measles cases by date of rash onset — Dade County, Florida, 1982**



*Measles — Continued*

school was in summer recess, but that case caused only one import-associated case. This outbreak might not have occurred if the first eight persons with measles had been appropriately vaccinated. Before these importations, Dade County, like most of the United States, was probably free of measles. Imported cases are an important source of measles throughout the country (1). Over 25% of reported cases during the first 26 weeks of 1982 were imported or import-associated (2). While such cases are generally not preventable, transmission to others is usually limited when immunization levels are high (1-3).

In Dade County schools, identification of susceptible students was difficult, because many health records merely identified vaccination without specifying dates of vaccination. Dated records allow reviewers to identify students who had been vaccinated before their first birthdays and need revaccination. Florida law now requires use of a dated form.

The high proportion of cases with documentation of adequate vaccination does not imply a low vaccine efficacy. If an outbreak occurs in a highly vaccinated population, a substantial proportion of cases would be expected among vaccinees (4). For example, if an outbreak were to occur in a population of which 90% was vaccinated with a 90%-effective vaccine, approximately half the cases would be expected among prior vaccine recipients. When highly effective vaccines, such as the current measles vaccine, have been given to very large proportions of a population, disease occurrence is infrequent and usually short lived. Measles vaccine efficacy has usually been greater than 90% when determined in settings similar to Dade County (5).

Successful control of this outbreak was facilitated by the collaboration of teachers, nurses, physicians, the news media, education and health officials, and parents and children. The mandatory policy to exclude non-compliant students from school attendance led to the vaccination of over 35,000 school children. The declining number of new measles cases among school children and the declining proportion of preventable cases suggested the policy's success.

Experience during other outbreaks has demonstrated that transmission was usually interrupted shortly after a decline in school-age preventable cases (6,7). The available data indicate that mandatory exclusion of non-compliant students, under the recently amended Florida statutes (8), was an effective strategy to interrupt measles transmission.

*References*

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**TABLE 1. Measles cases by 2-week intervals, by age groups — Dade County, Florida, 1982**

Age (yrs)	Aug 31- Sept 12	Sept 13- Sept 26	Sept 27- Oct 10	Oct 11- Oct 24	Oct 25- Nov 7	Nov 8- Nov 21	Nov 22- Dec 5	Total
0-4	—*	—	—	13	6	9	5	33
5-9	—	—	—	12	12	14	1	39
10-14	1	5	24	46	12	6	5	99
15-19	—	—	2	2	4	5	2	15
20+	—	—	—	5	4	4	4	17
Total	1	5	26	78	38	38	17	203

\*No reported cases

## Update, Influenza Activity — United States and Canada

**United States: New York:** On November 16, 1982, the New York State Health Department was informed that an outbreak of febrile respiratory illness was developing among the 390 residents enrolled at a job corp training center located in Sullivan County, New York. On November 18, an epidemiologist from the New York State Health Department visited the center and interviewed the residents who reported having a febrile respiratory illness in November. Only one resident was ill before November 13, but 24 more cases were reported through November 18. The residents and several staff members described having an acute illness with myalgia and cough, usually accompanied by fever ( $\geq 38.9$  C [102 F]) and sore throat. Specimens were collected from six residents who were ill at the time of the investigation, and influenza type A(H3N2) virus was later isolated from two of the six specimens.

Ten residents had onset of influenza on November 18 when the outbreak abruptly terminated as the residents were dispersed to their homes for a Thanksgiving holiday vacation. When they returned after vacation, no unusual prevalence of respiratory illness was observed. This episode represents the first documented outbreak of influenza in the 48 continental states this season.

**Texas:** The first reported influenza virus isolates have been identified from specimens collected on November 22 and 23 from children in Houston with sporadic influenza illness. This

*(Continued on page 665)*

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

Disease	49th Week Ending			Cumulative, First 49 Weeks		
	December 11, 1982	December 12, 1981	Median 1977-1981	December 11, 1982	December 12, 1981	Median 1977-1981
Aseptic meningitis	204	145	145	8,709	9,076	7,420
Brucellosis	1	3	4	147	166	171
Encephalitis: Primary (arthropod-borne & unsp.)	28	22	23	1,376	1,415	1,138
Post-infectious	1	1	2	59	87	205
Gonorrhea: Civilian	18,174	19,481	20,219	899,249	942,590	945,162
Military	556	828	672	24,568	26,425	25,325
Hepatitis: Type A	579	628	631	21,523	23,931	27,571
Type B	497	479	393	20,365	19,529	15,459
Non A, Non B	80	N	N	2,242	N	N
Unspecified	182	209	228	8,319	10,197	9,883
Legionellosis	5	N	N	526	N	N
Leprosy	11	2	5	197	235	166
Malaria	16	18	18	981	1,297	761
Measles (rubeola)	44	14	148	1,627	2,905	13,312
Meningococcal infections: Total	51	50	51	2,750	3,279	2,436
Civilian	51	50	51	2,737	3,266	2,416
Military	-	-	-	13	13	19
Mumps	134	145	289	4,989	4,411	13,122
Pertussis	36	26	41	1,644	1,161	1,584
Rubella (German measles)	31	42	115	2,217	2,008	11,447
Syphilis (Primary & Secondary): Civilian	606	676	524	30,886	29,271	23,556
Military	12	4	6	417	355	300
Tuberculosis	554	521	555	24,242	25,622	25,901
Tularemia	5	4	3	238	264	179
Typhoid fever	9	19	7	377	549	497
Typhus fever, tick-borne (RMSF)	6	3	3	972	1,163	1,111
Rabies, animal	97	93	73	5,840	6,823	4,745

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

	Cum. 1982		Cum. 1982
Anthrax	-	Poliomyelitis: Total	7
Botulism	76	Paralytic	7
Cholera	-	Psittacosis (Ark. 1, Wash. 1)	115
Congenital rubella syndrome	6	Rabies, human	-
Diphtheria	3	Tetanus	74
Leptospirosis (La. 1, Tex.1)	69	Trichinosis (N.C. 1)	83
Plague	18	Typhus fever, flea-borne (endemic, murine) (Tenn. 1, Hawaii 1)	42

TABLE III. Cases of specified notifiable diseases, United States, weeks ending  
December 11, 1982 and December 12, 1981 (49th week)

Reporting Area	Aseptic Mening- gitis	Brucel- losis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	Leprosy
			Primary	Post-in- fectious			A	B	NA,NB	Unspeci- fied		
	1982	Cum. 1982	Cum. 1982	Cum. 1982	Cum. 1982	Cum. 1981	1982	1982	1982	1982	1982	Cum. 1982
UNITED STATES	204	147	1,376	59	899,249	942,590	579	497	80	182	5	197
NEW ENGLAND	4	3	55	6	21,823	22,803	11	26	2	14	-	2
Maine	2	-	-	-	1,145	1,253	-	1	-	-	-	-
N.H.	-	-	8	-	701	851	-	-	-	1	-	-
Vt.	-	-	-	-	399	414	1	-	-	-	-	-
Mass.	2	-	25	-	9,727	9,662	4	8	1	12	-	-
R.I.	-	-	-	1	1,473	1,411	2	4	-	-	-	-
Conn.	-	3	22	5	8,378	9,212	4	13	1	1	-	2
MID. ATLANTIC	34	3	140	14	114,761	114,112	49	101	8	12	-	9
Upstate N.Y.	20	3	59	3	18,981	19,959	13	13	5	2	-	1
N.Y. City	8	-	19	-	47,180	46,423	10	33	-	2	-	6
N.J.	4	-	23	-	20,903	21,590	9	29	3	3	-	1
Pa.	2	-	39	11	27,697	26,140	17	26	-	5	-	1
E.N. CENTRAL	23	4	347	12	125,919	139,975	66	64	2	10	2	10
Ohio	10	1	134	5	33,615	43,423	41	26	-	3	-	-
Ind.	2	-	94	3	15,525	11,547	5	14	1	5	-	-
Ill.	-	2	18	2	34,163	41,036	1	1	1	-	-	8
Mich.	11	1	72	-	31,234	31,062	19	23	-	2	2	-
Wis.	-	-	29	2	11,382	12,907	-	-	-	-	-	2
W.N. CENTRAL	52	17	98	4	42,370	45,318	38	16	4	1	1	7
Minn.	-	1	27	1	6,158	7,191	4	2	1	-	-	4
Iowa	1	5	52	1	4,539	5,010	-	2	-	-	1	-
Mo.	49	4	8	-	20,033	20,959	4	10	1	1	-	1
N. Dak.	-	1	-	-	546	571	-	-	-	-	-	-
S. Dak.	1	1	-	1	1,082	1,224	-	-	-	-	-	1
Nebr.	1	2	6	-	2,531	3,362	2	-	-	-	-	1
Kans.	-	3	5	1	7,481	7,001	28	2	2	-	-	-
S. ATLANTIC	17	28	196	9	235,167	231,841	56	71	16	14	1	11
Del.	-	-	-	-	3,929	3,768	1	2	-	-	-	-
Md.	2	-	25	-	29,195	27,713	1	12	4	1	1	4
D.C.	-	-	-	-	14,437	13,202	-	2	-	-	-	-
Va.	4	10	42	1	18,960	21,119	4	6	2	2	-	1
W. Va.	-	-	16	-	2,634	3,411	1	1	-	-	-	-
N.C.	5	-	30	1	37,112	35,667	1	6	-	1	-	-
S.C.	-	2	2	-	22,843	22,493	2	1	-	-	-	-
Ga.	-	3	14	-	46,599	48,138	18	14	2	2	-	1
Fla.	6	13	67	7	59,458	56,330	28	27	8	8	-	5
E.S. CENTRAL	8	12	66	5	78,878	78,804	17	19	2	4	-	-
Ky.	1	-	1	-	10,557	9,856	7	3	-	-	-	-
Tenn.	2	7	30	-	30,655	29,939	4	8	1	3	-	-
Ala.	4	4	17	5	23,742	23,661	3	5	1	1	-	-
Miss.	1	1	18	-	13,924	15,348	3	3	-	-	-	-
W.S. CENTRAL	8	45	220	1	125,079	124,337	134	53	3	66	-	27
Ark.	-	7	21	-	10,067	9,470	-	1	-	5	-	-
La.	1	8	28	-	23,302	22,052	35	15	2	3	-	-
Okla.	2	8	39	-	13,723	13,663	22	14	1	7	-	-
Tex.	5	22	132	1	77,987	79,152	77	23	-	51	-	27
MOUNTAIN	14	3	55	2	30,285	37,252	57	38	4	14	1	2
Mont.	-	2	-	-	1,283	1,355	1	2	-	1	1	-
Idaho	-	1	-	-	1,448	1,670	-	-	-	-	-	1
Wyo.	-	-	1	-	922	978	1	-	-	-	-	-
Colo.	-	-	19	1	8,163	10,013	7	6	1	1	-	-
N. Mex.	-	-	1	-	4,183	4,237	5	-	-	-	-	-
Ariz.	4	-	11	-	7,765	10,957	18	8	1	6	-	-
Utah	1	-	18	1	1,496	1,844	18	6	1	4	-	1
Nev.	-	-	5	-	5,025	6,198	7	16	1	2	-	-
PACIFIC	44	32	199	6	124,967	148,148	151	109	39	47	-	129
Wash.	8	1	13	-	10,844	12,411	10	7	7	1	-	14
Oreg.	1	-	4	-	7,453	8,831	11	4	2	-	-	2
Calif.	34	30	166	6	100,962	120,202	130	98	30	46	-	76
Alaska	-	1	10	-	3,254	3,846	-	-	-	-	-	1
Hawaii	1	-	6	-	2,454	2,858	-	-	-	-	-	36
Guam	U	-	-	1	107	111	U	U	U	U	U	1
P.R.	-	-	1	3	2,548	3,115	2	1	-	4	-	3
V.I.	-	-	-	-	233	250	-	-	-	-	-	-
Pac. Trust Terr.	U	-	-	-	388	429	U	U	U	U	U	44

N: Not notifiable

U: Unavailable

TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending December 11, 1982 and December 12, 1981 (49th week)

Reporting Area	Malaria		Measles (Rubeola)			Meningococcal Infections (Total)		Mumps		Pertussis	Rubella		
	1982	Cum. 1982	1982	Cum. 1982	Cum. 1981	1982	Cum. 1982	1982	Cum. 1982	1982	1982	Cum. 1982	Cum. 1981
UNITED STATES	16	981	44	1,627	2,905	51	2,750	134	4,989	36	31	2,217	2,008
NEW ENGLAND	-	50	-	16	86	6	153	3	193	3	-	19	122
Maine	-	-	-	-	5	1	11	-	43	-	-	-	33
N.H.	-	2	-	3	9	2	20	-	18	1	-	11	53
Vt.	-	-	-	2	3	-	11	-	7	-	-	-	-
Mass.	-	28	-	5	59	3	44	1	83	2	-	2	23
R.I.	-	3	-	-	-	-	16	1	18	-	-	1	-
Conn.	-	17	-	6	10	-	51	1	24	-	-	5	13
MID. ATLANTIC	6	171	2	169	959	12	496	5	333	20	2	109	229
Upstate N.Y.	2	33	-	113	222	2	170	3	94	16	1	53	114
N.Y. City	-	66	1	44	106	2	95	-	47	-	1	36	55
N.J.	4	35	-	6	59	3	104	-	52	-	-	18	47
Pa.	-	37	1	6	572	5	127	2	140	4	-	2	13
E.N. CENTRAL	-	85	-	77	90	11	362	43	2,485	4	-	196	425
Ohio	-	13	-	1	20	1	124	31	1,730	2	-	4	3
Ind.	-	4	-	2	9	3	39	1	45	-	-	29	137
Ill.	-	36	-	24	25	5	96	4	206	1	-	73	118
Mich.	-	26	-	50	33	2	80	6	382	1	-	49	41
Wis.	-	6	-	-	3	-	23	1	122	-	-	41	126
W.N. CENTRAL	1	32	-	49	10	2	140	6	631	2	-	62	80
Minn.	1	5	-	-	3	-	32	-	456	-	-	7	8
Iowa	-	8	-	-	1	-	12	-	53	-	-	-	4
Mo.	-	10	-	2	1	1	42	1	21	2	-	38	2
N. Dak.	-	2	-	-	-	-	6	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	1	9	-	1	-	-	1	-
Nebr.	-	4	-	3	4	-	14	-	1	-	-	-	1
Kans.	-	3	-	44	1	-	25	5	99	-	-	16	65
S. ATLANTIC	-	127	42	210	489	5	570	22	314	5	2	96	146
Del.	-	4	-	-	-	-	1	-	12	-	-	1	1
Md.	-	20	-	4	5	1	42	1	33	-	-	34	1
D.C.	-	4	-	1	1	-	5	-	-	-	-	-	-
Va.	-	39	-	14	14	-	68	2	41	1	-	12	8
W. Va.	-	7	-	3	9	-	10	16	118	-	-	3	22
N.C.	-	8	1	2	3	-	110	1	21	-	-	2	5
S.C.	-	4	-	-	2	1	70	-	17	-	-	1	8
Ga.	-	16	-	-	111	2	111	2	26	1	1	18	39
Fla.	-	25	41	186	344	1	153	-	46	3	1	25	62
E.S. CENTRAL	-	10	-	9	6	4	166	2	66	-	-	47	40
Ky.	-	5	-	1	2	-	25	1	21	-	-	29	26
Tenn.	-	-	-	6	2	3	74	-	25	-	-	2	13
Ala.	-	2	-	2	2	1	54	-	10	-	-	-	1
Miss.	-	3	-	-	-	-	13	1	10	-	-	16	-
W.S. CENTRAL	2	67	-	173	875	3	316	27	256	1	1	121	191
Ark.	-	5	-	-	23	-	16	1	8	-	-	1	7
La.	-	5	-	14	4	-	63	-	6	1	-	1	9
Okla.	-	8	-	30	6	1	32	-	-	-	-	3	3
Tex.	2	49	-	129	842	2	205	26	242	-	1	116	172
MOUNTAIN	1	31	-	28	38	-	116	1	113	-	2	85	97
Mont.	-	1	-	-	-	-	7	-	6	-	-	6	3
Idaho	-	2	-	-	1	-	7	-	4	-	-	7	4
Wyo.	-	-	-	1	1	-	5	-	2	-	-	7	12
Colo.	-	12	-	7	11	-	48	1	19	-	-	6	30
N. Mex.	-	3	-	-	8	-	15	-	-	-	-	6	5
Ariz.	1	9	-	17	7	-	21	-	54	-	2	18	22
Utah	-	4	-	3	-	-	11	-	20	-	-	23	10
Nev.	-	-	-	-	10	-	2	-	8	-	-	12	11
PACIFIC	6	408	-	896	352	8	431	25	598	1	24	1,482	678
Wash.	-	24	-	42	3	1	50	20	99	-	16	57	106
Oreg.	-	15	-	24	5	3	79	-	-	-	1	7	53
Calif.	6	361	-	824	337	4	287	5	466	1	7	1,404	503
Alaska	-	1	-	1	7	-	11	-	12	-	-	5	1
Hawaii	-	7	-	5	7	-	4	-	21	-	-	9	15
Guam	U	1	U	6	6	U	2	U	5	U	U	2	3
P.R.	-	4	1	137	305	-	9	1	99	-	1	13	5
V.I.	-	-	-	-	24	2	2	-	3	-	-	2	1
Pac. Trust Terr.	U	-	U	1	1	U	5	U	6	U	U	2	2

U: Unavailable

TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending  
December 11, 1982 and December 12, 1981 (49th week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Tuberculosis		Tula- remia	Typhoid Fever		Typhus Fever (Tick-borne) (RMSF)		Rabies. Animal
	Cum. 1982	Cum. 1981	1982	Cum. 1982	Cum. 1982	1982	Cum. 1982	1982	Cum. 1982	Cum. 1982
UNITED STATES	30,886	29,271	554	24,242	238	9	377	6	972	5,840
NEW ENGLAND	579	562	15	702	7	-	18	-	11	42
Maine	7	5	-	53	-	-	-	-	-	26
N.H.	5	16	-	30	-	-	-	-	1	1
Vt.	4	17	-	10	-	-	2	-	-	2
Mass.	389	356	11	448	7	-	14	-	6	7
R.I.	24	35	-	31	-	-	-	-	2	-
Conn.	150	133	4	130	-	-	2	-	2	6
MID. ATLANTIC	4,124	4,183	103	4,087	7	1	67	-	45	200
Upstate N.Y.	406	425	30	709	7	-	11	-	16	110
N.Y. City	2,462	2,469	24	1,552	-	1	36	-	3	-
N.J.	596	586	27	803	-	-	12	-	14	17
Pa.	660	703	22	1,023	-	-	8	-	12	73
E.N. CENTRAL	1,741	2,212	61	3,645	1	2	37	1	87	583
Ohio	296	302	3	580	-	1	13	-	77	79
Ind.	193	280	6	439	-	-	2	-	2	73
Ill.	880	1,185	23	1,592	-	1	8	1	8	295
Mich.	276	356	25	827	-	-	11	-	-	7
Wis.	96	89	4	207	1	-	3	-	-	129
W.N. CENTRAL	518	641	20	725	39	-	16	-	34	1,164
Minn.	136	184	6	139	-	-	8	-	-	206
Iowa	32	29	2	73	3	-	1	-	4	378
Mo.	275	370	8	344	26	-	4	-	13	118
N. Dak.	7	12	-	15	-	-	-	-	-	95
S. Dak.	2	2	3	33	1	-	-	-	4	101
Nebr.	14	10	-	29	4	-	2	-	2	122
Kans.	52	34	1	92	5	-	1	-	11	144
S. ATLANTIC	8,506	7,762	137	5,055	13	-	45	4	519	1,240
Del.	25	15	-	45	-	-	-	-	-	2
Md.	472	552	11	586	1	-	10	1	50	86
D.C.	461	630	3	240	-	-	-	-	-	-
Va.	585	665	9	579	5	-	4	-	73	697
W. Va.	30	30	6	148	-	-	4	-	8	50
N.C.	694	614	19	743	-	-	3	2	224	65
S.C.	537	539	19	498	6	-	3	-	106	65
Ga.	1,759	1,871	43	827	-	-	-	-	51	207
Fla.	3,943	2,846	27	1,389	1	-	21	1	7	68
E.S. CENTRAL	2,127	1,918	54	2,196	8	-	20	1	97	627
Ky.	127	103	9	575	-	-	4	-	1	127
Tenn.	607	664	13	708	6	-	4	-	59	350
Ala.	794	584	15	600	-	-	9	-	17	143
Miss.	599	567	17	313	2	-	3	1	20	7
W.S. CENTRAL	8,148	7,030	44	2,932	121	2	41	-	159	1,130
Ark.	213	157	4	342	73	-	8	-	22	152
La.	1,772	1,595	-	447	3	-	3	-	2	31
Okla.	179	166	-	316	34	-	3	-	76	188
Tex.	5,984	5,112	40	1,827	11	2	27	-	59	759
MOUNTAIN	779	726	12	668	32	-	14	-	14	274
Mont.	5	11	-	39	4	-	-	-	5	91
Idaho	25	18	-	29	1	-	-	-	4	11
Wyo.	16	17	-	6	5	-	-	-	1	21
Colo.	223	231	2	92	7	-	3	-	1	48
N. Mex.	181	125	3	113	4	-	-	-	1	23
Ariz.	207	173	5	281	-	-	8	-	-	58
Utah	22	29	-	43	11	-	2	-	-	18
Nev.	100	122	2	65	-	-	1	-	2	4
PACIFIC	4,364	4,237	108	4,232	10	4	119	-	6	580
Wash.	160	184	9	271	1	2	9	-	9	8
Oreg.	109	113	7	186	2	-	4	-	1	5
Calif.	3,974	3,854	89	3,447	6	2	102	-	5	484
Alaska	15	13	-	80	1	-	1	-	-	83
Hawaii	106	73	3	248	-	-	3	-	-	-
Guam	1	-	U	38	-	U	-	U	-	-
P.R.	784	606	-	431	-	-	3	-	-	48
V.I.	24	16	-	1	-	-	-	-	-	-
Pac. Trust Terr.	-	-	U	114	-	U	1	U	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,\* week ending  
December 11, 1982 (49th 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	
<b>NEW ENGLAND</b>	661	441	156	31	20	13	56	<b>S. ATLANTIC</b>	1,179	693	328	78	35	45	43
Boston, Mass.	188	112	51	13	6	6	24	Atlanta, Ga.	130	74	40	8	4	4	4
Bridgeport, Conn.	38	25	10	2	-	-	-	Baltimore, Md.	196	110	53	19	7	7	4
Cambridge, Mass.	30	23	6	-	1	-	6	Charlotte, N.C.	80	41	28	4	3	4	3
Fall River, Mass.	26	19	5	1	1	-	5	Jacksonville, Fla.	92	51	30	6	4	1	7
Hartford, Conn.	40	26	11	1	2	-	5	Miami, Fla.	90	41	34	8	4	3	-
Lowell, Mass.	35	19	11	1	3	1	1	Norfolk, Va.	57	37	13	2	-	5	2
Lynn, Mass.	19	12	5	2	-	-	-	Richmond, Va.	81	47	28	4	-	2	4
New Bedford, Mass.	18	15	3	-	-	-	-	Savannah, Ga.	51	27	10	5	5	4	3
New Haven, Conn.	68	42	17	5	1	3	2	St. Petersburg, Fla.	93	69	20	2	1	1	6
Providence, R.I. †	56	52	-	2	-	2	5	Tampa, Fla.	75	52	13	4	2	4	2
Somerville, Mass.	11	8	3	-	-	-	-	Washington, D.C.	189	115	47	15	4	8	6
Springfield, Mass.	36	28	5	-	3	-	4	Wilmington, Del.	45	29	12	1	1	2	2
Waterbury, Conn.	43	28	12	2	1	-	1	<b>E.S. CENTRAL</b>	903	568	232	44	33	25	53
Worcester, Mass.	53	32	17	2	2	-	2	Birmingham, Ala.	135	92	28	10	4	1	5
<b>MID. ATLANTIC</b>	2,530	1,691	554	150	66	69	95	Chattanooga, Tenn.	75	54	14	3	1	3	5
Albany, N.Y.	53	38	10	1	1	3	2	Knoxville, Tenn.	63	48	11	1	2	1	2
Allentown, Pa.	17	13	4	-	-	-	1	Louisville, Ky.	111	56	34	10	5	6	11
Buffalo, N.Y.	100	74	21	1	1	3	5	Memphis, Tenn.	228	138	65	8	5	11	12
Camden, N.J.	34	15	11	2	5	1	-	Mobile, Ala.	141	96	32	2	9	2	9
Elizabeth, N.J.	31	25	5	1	-	-	2	Montgomery, Ala.	41	27	11	2	1	-	3
Erie, Pa. †	43	22	17	4	-	-	2	Nashville, Tenn.	109	57	37	8	6	1	6
Jersey City, N.J.	45	29	10	1	-	5	-	<b>W.S. CENTRAL</b>	1,298	751	310	111	57	69	61
N.Y. City, N.Y.	1,415	947	296	108	36	28	48	Austin, Tex.	47	32	8	3	3	1	3
Newark, N.J.	69	32	21	7	4	5	5	Baton Rouge, La.	43	28	13	-	1	1	1
Paterson, N.J.	24	13	2	3	2	4	2	Corpus Christi, Tex.	56	42	8	5	-	1	2
Philadelphia, Pa. †	263	163	69	13	9	9	13	Dallas, Tex.	179	100	44	16	14	5	4
Pittsburgh, Pa. †	60	40	13	3	-	4	-	El Paso, Tex.	82	46	16	7	5	8	14
Reading, Pa.	32	22	9	-	-	1	1	Fort Worth, Tex.	104	56	24	16	1	7	8
Rochester, N.Y.	94	65	17	3	3	6	6	Houston, Tex.	243	109	77	33	12	12	5
Schenectady, N.Y.	29	22	6	-	1	-	1	Little Rock, Ark.	84	52	24	3	1	4	4
Scranton, Pa. †	22	19	3	-	-	-	-	New Orleans, La.	122	63	32	7	9	11	-
Syracuse, N.Y.	108	83	20	1	4	-	-	San Antonio, Tex.	182	124	33	11	7	7	13
Trenton, N.J.	39	26	11	2	-	-	4	Shreveport, La.	55	36	7	7	3	2	-
Utica, N.Y.	26	24	2	-	-	-	-	Tulsa, Okla.	101	63	24	3	1	10	7
Yonkers, N.Y.	26	19	7	-	-	-	3	<b>MOUNTAIN</b>	678	434	143	40	27	34	27
<b>EN. CENTRAL</b>	2,285	1,406	572	154	67	86	68	Albuquerque, N. Mex.	76	50	10	6	5	5	1
Akron, Ohio	65	37	20	3	2	3	-	Colo. Springs, Colo.	36	29	3	4	-	-	1
Canton, Ohio	42	29	9	2	1	1	1	Denver, Colo.	124	85	29	3	5	2	5
Chicago, Ill.	500	283	130	44	17	26	8	Las Vegas, Nev.	82	51	18	4	5	4	5
Cincinnati, Ohio	171	119	40	8	2	2	18	Ogden, Utah	19	11	3	1	-	4	1
Cleveland, Ohio	153	77	50	10	5	11	3	Phoenix, Ariz.	169	101	43	10	7	8	1
Columbus, Ohio	140	80	43	8	3	6	-	Pueblo, Colo.	14	11	2	-	1	-	1
Dayton, Ohio	109	74	24	3	5	3	1	Salt Lake City, Utah	62	28	20	4	3	7	1
Detroit, Mich.	266	146	62	36	10	12	7	Tucson, Ariz.	96	68	15	8	1	4	11
Evansville, Ind.	40	24	12	2	-	2	2	<b>PACIFIC</b>	1,795	1,210	406	77	43	57	102
Fort Wayne, Ind.	42	25	15	1	-	1	4	Berkeley, Calif.	20	14	4	-	1	-	-
Gary, Ind.	21	11	6	2	2	-	1	Fresno, Calif.	88	65	14	2	4	3	7
Grand Rapids, Mich.	55	37	14	2	1	1	1	Glendale, Calif.	36	28	7	1	-	-	1
Indianapolis, Ind.	187	112	44	13	7	11	1	Honolulu, Hawaii	56	35	17	2	1	1	6
Madison, Wis.	43	27	12	2	2	-	6	Long Beach, Calif.	105	60	37	1	1	1	6
Milwaukee, Wis.	132	100	24	6	1	1	3	Los Angeles, Calif.	455	298	110	25	12	9	15
Peoria, Ill.	49	29	14	1	2	3	4	Oakland, Calif.	59	43	9	4	2	1	3
Rockford, Ill.	33	26	4	3	-	-	2	Pasadena, Calif.	30	19	7	1	-	3	2
South Bend, Ind.	42	31	8	2	1	-	3	Portland, Oreg.	156	122	25	4	2	3	12
Toledo, Ohio	142	104	28	4	3	3	3	Sacramento, Calif.	77	49	15	4	3	6	3
Youngstown, Ohio	53	35	13	2	3	-	-	San Diego, Calif.	135	84	36	7	4	4	11
<b>W.S. CENTRAL</b>	739	499	151	43	21	25	33	San Francisco, Calif.	167	111	36	11	6	3	10
Des Moines, Iowa	57	34	17	3	3	-	2	San Jose, Calif.	154	103	32	7	2	10	16
Duluth, Minn.	40	30	4	5	1	-	-	Seattle, Wash.	153	105	35	4	3	6	2
Kansas City, Kans.	29	22	5	-	-	2	-	Spokane, Wash.	59	40	12	3	2	2	5
Kansas City, Mo.	101	63	25	6	3	4	3	Tacoma, Wash.	45	34	10	1	-	-	4
Lincoln, Nebr.	34	28	2	3	-	1	1	<b>TOTAL</b>	12,068 <sup>††</sup>	7,693	2,852	728	369	423	538
Minneapolis, Minn.	88	68	9	4	3	4	4								
Omaha, Nebr.	94	53	28	5	4	4	5								
St. Louis, Mo.	165	108	31	15	4	7	10								
St. Paul, Minn.	72	51	18	1	1	1	3								
Wichita, Kans.	59	42	12	1	2	2	5								

\* 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.

### *Influenza — Continued*

report brings the number of states reporting influenza virus isolates of type A(H3N2) virus, to 8: Alaska, New York, Oregon, Pennsylvania, Tennessee, Texas, Virginia, and Washington.

**Canada:** Several isolates of influenza type A(H3N2) virus have been reported by Canadian health officials from specimens collected from persons ranging in age from 10 to 64. Six of the isolates were from British Columbia, three from Alberta, and two from Saskatchewan. Influenza activity was described at low levels throughout British Columbia and as sporadic in two locations in Alberta and around the area of Regina, Saskatchewan.

*Reported by R Deibel, MD, R Rothenberg, MD, State Epidemiologist, New York State Dept of Health; P Glezen, MD, Baylor College of Medicine, Houston, C Webb, Jr, MD, State Epidemiologist, Texas State Dept of Health; Bureau of Epidemiology, Laboratory Centre for Disease Control, Ottawa, Ontario; WHO Collaborating Center for Influenza, Influenza Br, Center for Infectious Diseases, CDC.*

## **Unexplained Immunodeficiency and Opportunistic Infections in Infants — New York, New Jersey, California**

CDC has received reports of four infants (under 2 years of age) with unexplained cellular immunodeficiency and opportunistic infections.

**Case 1:** The infant, a black/hispanic male weighing 5 lb 14 oz, was born in December 1980 following a 36-38-week pregnancy. Pregnancy had been complicated by bleeding in the fourth month and by preeclampsia in the ninth month. The infant was well until 3 months of age, when oral candidiasis was noted. At 4 months, hepatosplenomegaly was observed, and at 7 months, he had staphylococcal impetigo. Growth, which had been slow, stopped at 9 months. Head circumference, which had been below the third percentile, also stopped increasing. At 9 months, serum levels of IgG and IgA were normal; IgM was high-normal. T-cell studies were normal, except for impaired in-vitro responses to *Candida* antigen and alloantigen.

At 17 months of age, the infant had progressive pulmonary infiltrates, as well as continuing oral candidiasis, and was hospitalized. *Mycobacterium avium-intracellulare* was cultured from sputum and bone marrow samples. A CAT scan of the head revealed bilateral calcifications of the basal ganglia and subcortical regions of the frontal lobes. Repeat immunologic studies done at age 20 months showed lymphopenia, decreased numbers of T-lymphocytes, and severely impaired T-cell function in vitro; immunoglobulin determinations are pending. The infant remains alive and is receiving therapy for his mycobacterial infection.

The infant's mother, a 29-year-old resident of New York City, gave a history of intravenous drug abuse. Although she was in apparently good health at the time of the infant's birth, she developed fever, dyspnea, and oral candidiasis in October 1981. One month later, she was hospitalized and died of biopsy-proven *Pneumocystis carinii* pneumonia (PCP). She had been lymphopenic during the hospitalization; further immunologic studies were not done. At autopsy, no underlying cause for immune deficiency was found.

**Case 2:** The infant, a Haitian male weighing 6 lb 11 oz, was born in January 1981 following full-term pregnancy. The immediate postpartum period was complicated by respiratory distress. Diarrhea developed at 2 weeks of age and persisted. His physical development was retarded. At 5 months, he was hospitalized because of fever and diarrhea. On examination, he had hepatosplenomegaly, lymphadenopathy, and otitis media. While on antibiotics, he developed pulmonary infiltrates. An open lung biopsy revealed *Pneumocystis carinii*, *Cryptococcus*

*Immunodeficiency in Infants — Continued*

*neoformans*, and cytomegalovirus. Serum IgG, IgA, and IgM concentrations were elevated. The percentage of T-lymphocytes was decreased, but T-cell response to mitogens was normal. The infant died of respiratory insufficiency at 7½ months of age. At autopsy, the thymus, spleen, and lymph nodes showed lymphocyte depletion. His parents were residents of Brooklyn, New York; their health status is unknown.

**Case 3:** The infant, a Haitian male weighing 8 lb, was born in November 1981 following a normal, full-term pregnancy. He was apparently healthy until 5 months of age, when he was hospitalized with fever and respiratory distress. On examination, he had hepatosplenomegaly. A chest x-ray showed bilateral pulmonary infiltrates. Despite antibiotic therapy, the infant's condition deteriorated, and an open lung biopsy revealed PCP. Immunologic studies showed elevated serum concentrations of IgG, IgA and IgM, decreased percentage of T-lymphocytes, and impaired T-cell function *in vitro*. The infant died in May 1982. At autopsy, no cardiovascular anomalies were seen; the thymus was hypoplastic, but all lobes were present. His parents were residents of Newark, New Jersey; their health status is unknown.

**Case 4:** The infant, a white female weighing 5 lb, was born in April 1982 following a normal 35-week pregnancy. She was well until 2 months of age, when oral and vaginal *Candida* infections were noted. She responded to antifungal therapy, but at 5 months, candidiasis recurred, and she had hepatosplenomegaly. Immunologic evaluation showed that serum IgG, IgA, and IgM levels, normal at 2 months, were now elevated. The percentage of T-lymphocytes was decreased, and lymphocyte response to alloantigen was impaired. At 6 months of age, the infant was hospitalized because of fever and cough. Open lung biopsy revealed PCP. Despite appropriate antibiotic therapy, she died in November 1982.

The infant's mother, a 29-year-old resident of San Francisco, is a prostitute and intravenous drug abuser with a history of oral candidiasis and mild lymphopenia. She has had two other female children by different fathers. These half-sisters also have unexplained cellular immunodeficiency; one died of PCP. The children had not lived together.

None of the four infants described in the case reports was known to have received blood or blood products before onset of illness.

**Other cases with opportunistic infections:** Six additional young children with opportunistic infections (five with PCP, one with *M. avium-intracellulare*) and unusual cellular immunodeficiencies are under investigation. Three are male. All six children have died. One was a half-sister of the infant in Case 4.

**Other cases without opportunistic infections:** Physicians from New York City, New Jersey, and California have reported another 12 young children with immunodeficiencies similar to those seen in cases 1-4 but without life-threatening opportunistic infections. One is the other half-sister of the infant in Case 4. All the children are living; their ages range from 1 to 4 years. Eight are male. Clinical features seen in these 12 infants include: failure to thrive (83%), oral candidiasis (50%), hepatosplenomegaly (92%), generalized lymphadenopathy (92%), and chronic pneumonitis without a demonstrable infection (83%). Of the nine mothers for whom information is available, seven are reported to be intravenous drug abusers. None is Haitian.

*Reported by R O'Reilly, MD, D Kirkpatrick, MD, Memorial Sloan-Kettering Cancer Center, C Butkus Small, MD, R Klein, MD, H Keltz, MD, G Friedland, MD, Montefiore Hospital and Medical Center, K Bromberg, MD, S Fikrig, MD, H Mendez, MD, State University of New York, Downstate Medical Center, A Rubinstein, MD, Albert Einstein College of Medicine, M Hollander, MD, Misericordia Hospital Medical Center, F Siegal, MD, Mt Sinai School of Medicine, J Greenspan, MD, Northshore University Hospital, M Lange, MD, St Lukes-Roosevelt Hospital Center, S Friedman, MD, New York City Dept of Health, R Rothenberg, MD, State Epidemiologist, New York State Dept of Health; J Oleske, MD, C Thomas MD, R Cooper, MD, A de la Cruz, MD, St Michaels Medical Center, A Minefore, MD, St Josephs Medical Center, I Guerrero, MD, B Mojica, MD, W Parkin, DVM, State Epidemiologist, New Jersey State Dept of Health; M Cowan, MD, A Ammann, MD, D Wara, MD, University of California at San Francisco, S Dritz, MD,*

*Immunodeficiency in Infants – Continued*

City/County Health Dept, San Francisco, J Chin, MD, State Epidemiologist, California State Dept of Health Svcs; Field Svcs Div, Epidemiology Program Office, AIDS Activity, Div of Host Factors, Center for Infectious Diseases, CDC.

**Editorial Note:** The nature of the immune dysfunction described in the four case reports is unclear. The infants lacked the congenital anomalies associated with Di George's syndrome. The immunologic features of high-normal or elevated immunoglobulin levels and T-lymphocyte depletion are not typical of any of the well-defined congenital immunodeficiency syndromes. They have, however, been described in a few children with variants of Nezelof's syndrome, a rare, poorly characterized illness of unknown etiology (1,2). The occurrence of immune deficiency in the infant in case 4 and in her half-sisters raises the possibility of an inherited disorder. However, inheritance would have to have occurred in a dominant manner, an inheritance pattern not previously described for immunodeficiency resembling that seen in these half-sisters.

It is possible that these infants had the acquired immune deficiency syndrome (AIDS). Although the mother of the infant in case 1 was not studied immunologically, her death from PCP was probably secondary to AIDS. The mothers of the other three infants were Haitian or intravenous drug abusers, groups at increased risk for AIDS (3). The immunologic features described in the case reports resemble those seen both in adults with AIDS (4) and in a child reported to have developed immunodeficiency following receipt of blood products from a patient with AIDS (5). Case 2 had essentially normal T-cell responses to mitogens *in vitro*. This finding is atypical for AIDS, but it has been seen in a few adult AIDS cases (6).

Although the etiology of AIDS remains unknown, a series of epidemiologic observations suggests it is caused by an infectious agent (3,5,7-9). If the infants described in the four case reports had AIDS, exposure to the putative "AIDS agent" must have occurred very early. Cases 2-4 were less than 6 months old when they had serious opportunistic infections. Case 1 had oral candidiasis beginning at 3 months of age, although *M. avium-intracellulare* infection was not documented until 17 months. Transmission of an "AIDS agent" from mother to child, either *in utero* or shortly after birth, could account for the early onset of immunodeficiency in these infants.

The relationship between the illnesses seen in the reported cases with severe opportunistic infection and the 12 infants without such infections is unclear at present. The immune dysfunction seen in the children and the sociodemographic profiles of the mothers appear similar in both groups. Prospective study of the 12 children is necessary to define the natural history of their illnesses and the possible relationship of their illnesses to AIDS.

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## Erratum, Vol. 31, No. 48

- p. 641. In the article, "Alcohol-Related Highway Fatalities among Young Drivers—United States," the ratios in the fifth and sixth paragraphs should be: 43.2/100,000 and 28.7/100,000, respectively, instead of as published.

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The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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