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CENTERS FOR DISEASE CONTROL

September 2, 1988 / Vol. 37 / No. 34

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

HIV Seroprevalence in Migrant and Seasonal Farmworkers — North Carolina, 1987

The prevalence of human immunodeficiency virus (HIV) was determined for patients attending a health clinic serving approximately 4500 migrant and seasonal farmworkers in North Carolina. From August 27 to October 27, 1987, all blood specimens routinely collected at the clinic for other purposes were tested for HIV antibody by enzyme immunoassay, with confirmation by Western blot; the specimens had no personal identifiers. They were also tested for syphilis antibody by rapid plasma reagin (RPR), with confirmation by the fluorescent treponemal antibody absorption (FTA-ABS) method.

Four hundred twenty-six blood samples were collected. Eleven (2.6%) of the 426 samples were HIV-antibody–positive (Table 1). All positive specimens were from persons 13–59 years of age. The highest age-specific prevalence (6.7%) was in the 30–39-year age group. The HIV-antibody prevalence was more than twice as high for males (3.5%) as for females (1.5%). The prevalence for black males was more than twice as high (eight [5.9%] of 135) as that for black females at the same clinic (three [2.3%] of 128). Persons positive by RPR and FTA-ABS had higher rates of HIV infection (5.6%) than did those whose syphilis serologies were negative (2.2%). Only those differences in prevalence of HIV by race were statistically significant.

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Editorial Note: Estimates of the prevalence of HIV infection in migrant and seasonal farmworkers are limited. The transience of this population makes it difficult for health-care workers to assess the health status of these persons, who frequently may not have access to health care. This survey detected a relatively high prevalence of HIV infection among black migrant and seasonal farmworkers who were patients at one clinic in North Carolina. However, the observed rates may overestimate the prevalence of HIV in migrant and seasonal farmworkers because the 426 samples

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tested may not be representative of the migrant and seasonal farmworker population as a whole (i.e., some of the blood specimens may have been drawn because of HIV-related symptoms or to detect sexually transmitted diseases). The results are consistent with other published reports (*1–4*). Additional data are required from other migrant and seasonal farmworker populations to document the extent of HIV infection and adequately target HIV prevention programs.

Outpatient clinics provide the primary opportunity to estimate the HIV seroprevalence in migrant and seasonal farmworkers seeking health care. CDC, in collaboration with the Migrant Health Program, Bureau of Health Care Delivery and Assistance, Health Resources and Services Administration, has initiated HIV seroprevalence surveys in eight clinics serving migrant and seasonal farmworkers around the country. Results obtained from these surveys will provide a basis for targeting appropriate HIV education, testing, and counseling services for this population. Migrant and seasonal farmworkers who are at increased risk and those with other sexually transmitted diseases (especially syphilis) should be encouraged to seek counseling and testing for HIV. Other innovative outreach programs will be particularly important for this difficult-to-reach population.

References

1. Ward JW, Kleinman SH, Douglas DK, Grindon AJ, Holmberg SD. Epidemiologic characteristics of blood donors with antibody to human immunodeficiency virus. Transfusion 1988;28:298–301.

TABLE 1. Number and percent of HIV-seropositive migrant and seasonal farmworkers, by patient characteristics – North Carolina, 1987

Patient characteristic	No. screened	No. (%) positive	
Age* (yrs)			
≤12	2	0	
13–19	32	1	(3.1)
20–29	97	1	(1.0)
30–39	75	5	(6.7)
40–49	83	3	(3.6)
50–59	82	1	(1.2)
≥60	54	0	
Sex			
Male	227	8	(3.5)
Female	199	3	(1.5)
Syphilis serology			
RPR and FTA-ABS positive	54	3	(5.6)
RPR or FTA-ABS negative	372	8	(2.2)
Race/ethnicity			
White	38	0	
Black	263	11	(4.1)
Hispanic	125	0	
Total	**426**	**11**	**(2.6)**

*Age unknown for 1.

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2. CDC. Trends in human immunodeficiency virus infection among civilian applicants for military service—United States, October 1985–December 1986. MMWR 1987;36:273–6.
3. Selik RM, Castro KG, Pappaioanou M. Racial/ethnic differences in the risk of AIDS in the United States. Am J Public Health 1988 (in press).
4. Castro KG, Lieb S, Jaffe HW, et al. Transmission of HIV in Belle Glade, Florida: lessons for other communities in the United States. Science 1988;239:193–7.

Acute Rheumatic Fever among Army Trainees — Fort Leonard Wood, Missouri, 1987–1988

In February 1988, the Office of the Army Surgeon General was notified of two cases of acute rheumatic fever (ARF) and four cases of suppurative axillary lymphadenitis associated with group A β-hemolytic streptococcus (GABHS) infections among soldiers who recently completed training at Fort Leonard Wood, Missouri. An investigation was conducted in March 1988 to determine the extent of ARF and GABHS among soldiers and their dependents at Fort Leonard Wood.

A retrospective records review revealed that from February 1987 through February 1988, 10 soldiers assigned to Fort Leonard Wood were hospitalized with ARF*; four additional patients developed signs and symptoms of ARF within 5 weeks of transfer to other army posts. Thirteen of the cases occurred from October 1987 through February 1988. Eight patients had carditis, 12 had polyarthritis, one had erythema marginatum, and one had subcutaneous nodules. Eleven had had a positive throat culture for GABHS, and 11 had an elevated antistreptolysin O titer. Neighboring hospitals and health departments reported no ARF cases among civilians during the same period.

An investigation based on data from routine hospital surveillance showed that hospitalization rates for acute respiratory disease (ARD) had also increased during the fall of 1987 among personnel in basic training (Figure 1). A review of records of throat cultures obtained from these patients indicated that recovery of GABHS increased from approximately 25% in late summer to more than 70% in early fall (Figure 1). From October 1987 to February 1988, 22 patients were also identified with a peritonsillar abscess (more than a threefold increase compared with the corresponding period of the previous year). Most patients with peritonsillar abscess had throat cultures positive for GABHS.

During the first week of March 1988, a questionnaire was administered to 735 basic trainees in six companies who were given physical examinations and who had throat cultures done; GABHS was recovered from 85 (12%). The prevalence of GABHS was 1% in new arrivals but over 45% in trainees in their sixth week of training. GABHS was isolated from 49 (14%) of 362 trainees with signs of pharyngitis (a beefy red pharynx and enlarged cervical lymph nodes), compared with 36 (10%) of the 373 trainees without signs of pharyngitis.

GABHS isolates from the ARF patients were not available for M-typing; however, of the 85 GABHS strains isolated during the survey, most had mucoid colony morphology, 74% were type M18, and 20% were type M3. Among the trainees with these GABHS-positive cultures, presence of type M18 was the only independent

*A case of ARF was diagnosed if the patient had clinical syndromes meeting the modified Jones criteria.

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predictor of signs of pharyngitis. Convalescent serum samples were obtained from six of the patients with ARF; bactericidal antibodies to type M18 or type M3 strains were detected in only one.

In response to the outbreak, benzathine penicillin was given once during the second week of March to all nonallergic soldiers in training at Fort Leonard Wood, and all new trainees are now treated on arrival. No further cases of ARF have been reported. Admissions to the hospital for ARD and the percentage of throat cultures yielding GABHS have decreased after institution of the prophylactic regimen.

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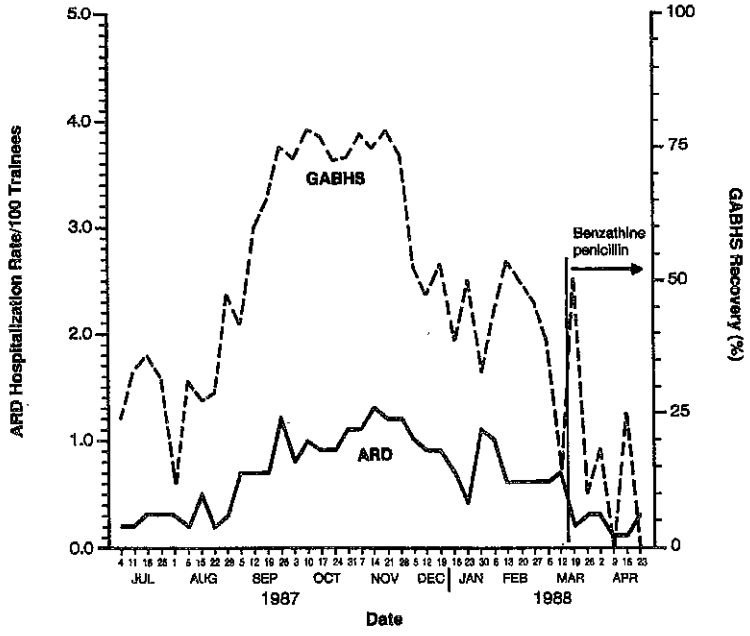
Editorial Note: The number of ARF cases seen by physicians in several areas of the United States where ARF data have been examined has increased recently (*1–4*). For example, in Utah, a high rate of the disease (11.8 cases/100,000 children 3–18 years old) was observed in 1985 (*5*). This rate was six times greater than annual rates for 1977 through 1981 in Memphis, Tennessee (*6*), and 19 times greater than those for 1971 through 1980 in suburban Los Angeles County (*7*). However, the Utah rate was similar to those reported in Baltimore from 1968 to 1970 (*8*) and in Olmstead County, Minnesota, from 1965 to 1978 (*9*). The report of an increase in cases of ARF at Fort Leonard Wood is similar to reports from civilian populations and a recent report from the Navy Training Center, San Diego, California (*10*). A marked increase in strepto-

FIGURE 1. Rates of hospitalization for acute respiratory disease (ARD) and percent of recovery of group A β-hemolytic streptococcus (GABHS) in Army trainees, by week — Fort Leonard Wood, Missouri, 1987 and 1988



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coccal pharyngitis and other suppurative streptococcal infections was observed in the military trainees coincident with each outbreak of ARF. Prophylactic use of penicillin in trainees to prevent ARF had been discontinued for several years at the Navy Training Center in San Diego before the outbreak there and at all U.S. Army facilities because of the absence of cases.

The predominance of type M18 among GABHS isolated at Fort Leonard Wood and the association of this M-type with clinical signs of pharyngitis suggest that type M18 may have caused the outbreak of ARF. Unfortunately, GABHS isolates were not available for typing from patients with ARF. The presence of mucoid strains and the association between mucoid colony morphology and type M18 GABHS have been described in Ohio, where an increase in ARF cases has also been observed (*11*). The lack of bactericidal antibody to type M18 or type M3 in all but one of the six patients with ARF is unexplained and suggests that either these M-types were not involved or that the bactericidal antibody response to these M-types cannot be used to determine their etiologic role.

Although the Army closely monitors respiratory infections among basic trainees, an ARF outbreak was difficult to detect because of 1) the variety of clinical syndromes, 2) the low clinical suspicion for diagnosing this disease, and 3) the latency from infection to the occurrence of ARF signs and symptoms, which caused at least four cases of ARF to appear at medical facilities removed from Fort Leonard Wood. Reduction of streptococcal pharyngitis and suppurative infections as well as ARF are the objectives of GABHS control programs for military trainees. Rapid detection of an increase in GABHS infections is required for control programs in the military not routinely using penicillin prophylaxis. Although mucoid colony morphology is an easily identifiable characteristic that has occurred coincident with reemergence of ARF in selected geographic areas, it is unknown whether this bacterial characteristic is important in the pathogenesis of ARF. Therefore, the presence of mucoid strains is not a valid criterion alone for reintroducing penicillin prophylaxis. The Army will continue to monitor cases of ARF and symptomatic trainees with GABHS-positive throat cultures to determine levels of activity. Surveillance data will also be used to determine a threshold level of GABHS disease for implementing prophylaxis. Rapid detection kits are useful for expediting identification of infected persons, but they should not be used as the only method to detect GABHS.

State health departments are requested to notify the Respiratory Diseases Branch (RDB), Division of Bacterial Diseases, Center for Infectious Diseases, CDC (404) 639-3021, of clusters of cases (two or more) of ARF. The Bacterial Reference Laboratory, RDB, serves as the national reference laboratory for serotyping streptococcal isolates from patients with known or suspected ARF.

References

1. Veasy LG, Wiedmeier SE, Orsmond GS, et al. Resurgence of acute rheumatic fever in the intermountain area of the United States. N Engl J Med 1987;316:421–7.
2. Hosier DM, Craenen JM, Teske DW, Wheller JJ. Resurgence of acute rheumatic fever. Am J Dis Child 1987;141:730–3.
3. Congeni B, Rizzo C, Congeni J, Sreenivasan VV. Outbreak of acute rheumatic fever in northeast Ohio. J Pediatr 1987;111:176–9.
4. Wald ER, Dashefsky B, Feidt C, Chiponis D, Byers C. Acute rheumatic fever in western Pennsylvania and the tristate area. Pediatrics 1987;80:371–4.
5. CDC. Acute rheumatic fever—Utah. MMWR 1987;36:108–10,115.
6. Land MA, Bisno AL. Acute rheumatic fever: a vanishing disease in suburbia. JAMA 1983;249:895–8.

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7. Odio A. The incidence of acute rheumatic fever in a suburban area of Los Angeles: a ten-year study. West J Med 1986;144:179–84.
8. Gordis L. Effectiveness of comprehensive-care programs in preventing rheumatic fever. N Engl J Med 1973;289:331–5.
9. Annegers JF, Pillman NL, Weidman WH, Kurland LT. Rheumatic fever in Rochester, Minnesota, 1935–1978. Mayo Clin Proc 1982;57:753–7.
10. CDC. Acute rheumatic fever at a Navy Training Center—San Diego, California. MMWR 1988;37:101–4.
11. Marcon MJ, Hribar MM, Hosier DM, et al. Occurrence of mucoid M-18 *Streptococcus pyogenes* in a central Ohio pediatric population. J Clin Microbiol 1988;26:1539–42.

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

Disease	34th Week Ending			Cumulative, 34th Week Ending		
	Aug. 27, 1988	Aug. 29, 1987	Median 1983-1987	Aug. 27, 1988	Aug. 29, 1987	Median 1983-1987
Acquired Immunodeficiency Syndrome (AIDS)	844	U *	136	20,661	12,702	4,944
Aseptic meningitis	198	557	557	3,328	6,381	5,408
Encephalitis: Primary (arthropod-borne & unspec)	16	67	40	480	773	697
Post-infectious	2	2	1	83	79	79
Gonorrhea: Civilian	12,156	15,789	18,862	440,295	510,758	568,921
Military	216	452	433	7,981	11,092	13,794
Hepatitis: Type A	513	431	429	15,794	16,121	14,095
Type B	442	519	527	14,496	16,879	16,484
Non A, Non B	50	54	72	1,673	2,061	2,384
Unspecified	41	80	106	1,386	2,065	3,181
Legionellosis	12	31	13	578	623	463
Leprosy	6	6	6	114	129	163
Malaria	25	45	21	538	582	595
Measles: Total†	47	14	18	2,135	3,221	2,332
Indigenous	43	10	14	1,917	2,835	1,961
Imported	4	4	4	218	386	258
Meningococcal Infections	29	41	30	2,033	2,058	1,961
Mumps	52	70	28	3,367	10,114	2,382
Pertussis	84	110	101	1,535	1,477	1,477
Rubella (German measles)	7	3	6	150	278	496
Syphilis (Primary & Secondary): Civilian	789	831	562	24,860	22,862	18,088
Military	2	5	5	112	125	125
Toxic Shock syndrome	6	19	6	212	223	258
Tuberculosis	464	510	488	13,235	13,793	13,793
Tularemia	3	8	8	127	136	136
Typhoid Fever	8	18	6	216	209	215
Typhus fever, tick-borne (RMSF)	25	23	25	437	448	508
Rabies, animal	81	113	121	2,756	3,218	3,477

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1988		Cum. 1988
Anthrax	-	Leptospirosis (Hawaii 1)	20
Botulism: Foodborne	16	Plague (N. Mex. 1)	9
Infant	22	Poliomyelitis, Paralytic	-
Other	3	Psittacosis (N.C. 1)	53
Brucellosis (Mo. 1; Up.N.Y. 1)	41	Rabies, human	-
Cholera	-	Tetanus (Conn. 1; Up.N.Y. 1)	32
Congenital rubella syndrome	3	Trichinosis	36
Congenital syphilis, ages < 1 year	171		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Four of the 47 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 August 27, 1988 and August 29, 1987 (34th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	20,661	3,328	480	83	440,295	510,758	15,794	14,496	1,673	1,386	578	114
NEW ENGLAND	863	187	18	4	13,715	15,509	587	809	95	69	26	14
Maine	26	10	1	-	263	469	16	37	3	1	5	-
N.H.	19	20	1	3	173	267	37	53	7	4	3	-
Vt.	9	12	5	-	87	137	9	23	5	2	1	-
Mass.	463	79	8	1	4,713	5,698	280	503	64	49	14	13
R.I.	56	42	-	-	1,161	1,363	64	64	9	-	3	1
Conn.	290	24	3	-	7,318	7,575	181	129	7	13	-	-
MID. ATLANTIC	6,974	299	38	4	65,429	82,688	987	1,892	104	155	141	8
Upstate N.Y.	880	185	26	1	9,265	11,271	494	498	45	15	65	-
N.Y. City	3,901	67	7	3	26,303	42,879	216	845	11	112	27	7
N.J.	1,662	47	5	-	9,756	10,641	167	426	37	26	20	1
Pa.	531	-	-	-	20,105	17,897	110	123	11	2	29	-
E.N. CENTRAL	1,488	475	119	12	71,611	75,794	1,037	1,554	147	78	116	4
Ohio	322	164	32	3	16,317	17,251	232	372	25	12	49	-
Ind.	80	49	15	-	5,613	6,826	100	220	13	21	8	-
Ill.	691	66	30	9	20,938	23,020	297	319	51	19	-	3
Mich.	317	172	31	-	23,577	22,869	253	469	38	23	46	-
Wis.	78	24	11	-	5,166	6,828	155	174	20	3	13	1
W.N. CENTRAL	494	149	31	7	18,527	20,588	896	690	78	24	58	1
Minn.	102	25	6	3	2,508	3,228	71	90	15	3	2	-
Iowa	28	19	8	-	1,350	1,978	35	66	13	1	14	-
Mo.	256	59	1	-	10,598	10,841	522	405	33	12	13	-
N. Dak.	4	-	4	-	97	195	4	6	2	4	1	-
S. Dak.	5	13	1	1	348	378	7	3	2	-	14	-
Nebr.	30	5	5	2	1,056	1,359	42	35	1	-	5	-
Kans.	69	28	6	1	2,570	2,609	215	85	12	4	9	1
S. ATLANTIC	3,532	749	71	27	128,116	133,315	1,455	3,128	257	211	100	1
Del.	44	17	3	-	1,910	2,173	24	86	6	2	8	-
Md.	358	88	6	3	13,286	15,128	203	457	25	18	15	1
D.C.	327	14	1	1	8,842	8,704	12	32	3	1	1	-
Va.	225	81	23	3	8,929	9,730	270	210	54	133	6	-
W. Va.	10	19	11	-	884	985	10	43	3	3	-	-
N.C.	200	94	16	-	20,053	19,690	219	548	63	-	27	-
S.C.	116	12	-	1	9,660	10,944	31	343	8	5	15	-
Ga.	474	85	1	-	24,250	23,510	313	442	10	5	13	-
Fla.	1,778	339	10	19	40,302	42,451	373	967	85	44	15	-
E.S. CENTRAL	507	227	40	6	34,972	38,618	482	872	123	7	24	1
Ky.	61	66	11	1	3,487	3,877	362	151	42	2	9	-
Tenn.	235	21	11	-	11,726	13,436	73	453	31	-	7	-
Ala.	127	115	18	2	10,894	12,524	31	216	42	5	5	1
Miss.	84	25	-	3	8,865	8,781	16	52	8	-	3	-
W.S. CENTRAL	1,770	432	55	3	49,742	57,719	1,849	1,223	133	351	15	19
Ark.	65	8	2	-	4,820	6,597	217	69	1	11	3	-
La.	207	66	17	1	9,867	10,272	94	238	17	11	5	1
Okla.	99	41	4	-	4,591	6,410	352	124	32	22	7	-
Tex.	1,399	317	32	2	30,464	34,440	1,186	792	83	307	-	18
MOUNTAIN	619	125	22	2	9,637	13,501	2,182	1,127	175	112	31	1
Mont.	10	2	-	-	311	374	26	37	9	3	2	-
Idaho	8	1	-	-	249	475	109	80	5	3	-	-
Wyo.	3	2	-	-	135	291	5	11	3	-	2	-
Colo.	230	47	3	-	2,181	2,946	150	142	48	55	8	1
N. Mex.	30	8	2	-	923	1,442	396	161	13	1	1	-
Ariz.	196	36	8	1	3,370	4,691	1,109	440	54	32	12	-
Utah	47	18	4	1	376	422	228	91	29	14	3	-
Nev.	95	11	5	-	2,092	2,860	159	165	14	4	3	-
PACIFIC	4,414	685	86	18	48,546	73,026	6,319	3,201	561	379	67	65
Wash.	248	-	6	4	4,257	5,690	1,404	525	134	40	14	4
Oreg.	135	-	-	-	2,114	2,689	937	393	55	21	-	1
Calif.	3,947	606	76	14	41,072	62,958	3,683	2,207	363	308	50	52
Alaska	15	13	2	-	679	1,117	288	42	5	5	-	1
Hawaii	69	66	2	-	424	672	7	34	4	5	3	7
Guam	1	-	-	-	87	151	9	9	-	2	1	4
P.R.	768	35	2	1	900	1,392	31	170	29	31	-	3
V.I.	32	-	-	-	265	175	1	5	2	-	-	-
Amer. Samoa	-	-	-	-	59	57	-	2	-	5	-	2
C.N.M.I.	-	-	-	-	34	-	1	2	-	4	-	1

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 27, 1988 and August 29, 1987 (34th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	1988	Cum. 1988	Cum. 1987
UNITED STATES	538	43	1,917	4	218	3,221	2,033	52	3,367	84	1,535	1,477	7	150	278
NEW ENGLAND	44	-	80	-	50	253	179	1	105	6	119	89	-	6	1
Maine	2	-	7	-	-	3	7	-	-	-	11	17	-	-	1
N.H.	1	-	66	-	44	152	20	-	95	-	33	17	-	3	-
Vt.	3	-	-	-	-	26	13	1	3	-	3	4	-	-	-
Mass.	23	-	1	-	2	49	82	-	7	1	47	36	-	1	-
R.I.	6	-	-	-	-	2	21	-	-	3	9	1	-	1	-
Conn.	9	-	6	-	4	21	36	-	-	2	16	14	-	-	-
MID. ATLANTIC	74	25	791	1	43	564	191	6	280	16	100	153	-	12	11
Upstate N.Y.	23	-	16	-	16	39	93	3	78	15	61	107	-	2	9
N.Y. City	40	-	40	1†	3	452	52	2	94	-	2	-	-	7	1
N.J.	5	25	217	-	11	35	45	-	31	-	4	9	-	1	1
Pa.	6	-	518	-	13	38	1	1	77	1	33	37	-	2	-
E.N. CENTRAL	32	-	132	-	46	300	281	5	684	4	157	198	1	24	35
Ohio	7	-	2	-	22	5	97	-	97	-	25	51	1	1	-
Ind.	2	-	57	-	-	-	23	-	67	-	60	13	-	-	-
Ill.	1	-	55	-	15	129	63	5	258	1	24	14	-	19	25
Mich.	19	-	18	-	5	29	61	-	174	3	28	41	-	4	9
Wis.	3	-	-	-	4	137	37	-	88	-	20	79	-	-	1
W.N. CENTRAL	14	-	11	-	1	230	78	1	118	5	90	89	-	-	1
Minn.	5	-	10	-	1	39	16	-	-	5	42	11	-	-	-
Iowa	1	-	-	-	-	-	-	-	31	-	19	31	-	-	1
Mo.	4	-	1	-	-	189	29	-	30	-	11	24	-	-	-
N. Dak.	-	-	-	-	-	1	-	-	-	-	7	7	-	-	-
S. Dak.	-	-	-	-	-	-	3	-	1	-	5	3	-	-	-
Nebr.	1	-	-	-	-	-	10	-	11	-	-	1	-	-	-
Kans.	3	-	-	-	-	1	20	1	45	-	6	12	-	-	-
S. ATLANTIC	74	9	289	1	15	130	360	21	560	16	174	230	-	16	14
Del.	-	-	-	-	-	32	2	-	-	-	5	5	-	-	2
Md.	10	-	11	-	3	5	41	5	100	-	26	11	-	1	2
D.C.	11	-	-	-	-	1	7	8	212	1	1	-	-	-	-
Va.	10	-	141	-	2	1	40	6	148	3	30	44	-	11	1
W. Va.	-	-	6	-	-	-	6	-	9	1	7	33	-	-	-
N.C.	11	1	1	1†	3	5	60	2	40	6	46	93	-	-	1
S.C.	8	-	-	-	-	2	33	-	4	-	1	-	-	-	-
Ga.	4	-	-	-	-	1	51	-	25	5	30	23	-	1	1
Fla.	20	8	130	-	7	83	120	-	22	-	28	21	-	3	7
E.S. CENTRAL	8	-	52	-	-	5	192	1	384	12	51	30	2	2	3
Ky.	-	-	35	-	-	-	39	-	174	-	6	1	-	-	2
Tenn.	-	-	-	-	-	-	116	1	196	1	17	9	2	2	1
Ala.	5	-	1	-	-	3	26	-	11	11	27	15	-	-	-
Miss.	3	-	16	-	-	2	11	N	N	-	1	5	-	-	-
W.S. CENTRAL	53	-	11	-	3	409	134	7	652	3	93	149	-	7	11
Ark.	2	-	-	-	1	-	17	3	85	2	11	10	-	3	2
La.	9	-	-	-	-	-	38	4	252	1	16	30	-	-	-
Okla.	8	-	8	-	-	3	14	-	173	-	39	109	-	1	5
Tex.	34	-	3	-	2	406	65	-	142	-	27	-	-	3	4
MOUNTAIN	26	-	117	-	21	491	58	2	152	13	443	129	-	6	24
Mont.	4	-	5	-	19	128	2	-	2	-	1	6	-	-	8
Idaho	1	-	-	-	1	-	7	1	3	1	261	42	-	-	1
Wyo.	-	-	-	-	-	2	-	-	2	-	1	5	-	-	1
Colo.	9	-	112	-	1	9	14	-	28	-	14	43	-	2	-
N. Mex.	1	-	-	-	-	317	10	N	N	5	25	8	-	-	-
Ariz.	6	-	-	-	-	31	15	1	103	7	120	23	-	-	4
Utah	4	-	-	-	-	1	9	-	3	-	20	2	-	3	10
Nev.	1	-	-	-	-	3	1	-	11	-	1	-	-	1	-
PACIFIC	213	9	434	2	39	839	560	8	432	9	308	410	4	78	178
Wash.	14	-	2	-	-	41	48	-	40	7	71	63	-	-	1
Oreg.	11	-	3	-	-	74	31	N	N	-	20	55	-	-	2
Calif.	177	9	426	2†	31	720	460	6	359	2	166	150	-	54	112
Alaska	2	-	-	-	-	-	6	-	9	-	6	6	-	-	2
Hawaii	9	-	3	-	8	4	15	2	13	-	45	136	4	24	61
Guam	-	-	-	-	1	2	-	-	2	-	-	-	-	1	1
P.R.	1	-	191	-	-	724	8	1	8	-	12	15	-	2	2
V.I.	-	-	-	-	-	-	-	-	28	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C.N.M.I.	1	-	-	-	-	-	1	-	2	-	-	-	-	-	-

*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 August 27, 1988 and August 29, 1987 (34th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	24,860	22,862	212	13,235	13,793	127	216	437	2,756
NEW ENGLAND	718	393	17	330	422	2	16	8	11
Maine	11	1	4	18	18	-	-	-	1
N.H.	6	3	3	7	12	-	-	-	3
Vt.	3	2	2	2	9	-	1	-	-
Mass.	278	188	8	184	238	1	10	4	-
R.I.	22	8	-	31	35	-	-	2	-
Conn.	398	191	-	88	110	1	5	2	7
MID. ATLANTIC	5,048	4,304	31	2,388	2,340	-	40	16	339
Upstate N.Y.	335	149	16	343	338	-	5	8	17
N.Y. City	3,234	3,119	5	1,187	1,109	-	24	6	-
N.J.	591	453	3	428	445	-	11	-	10
Pa.	888	583	7	430	448	-	-	2	312
E.N. CENTRAL	713	609	33	1,488	1,561	1	24	34	100
Ohio	68	76	23	277	298	-	6	29	4
Ind.	36	42	-	150	144	-	2	-	17
Ill.	351	316	1	635	686	-	11	2	21
Mich.	238	128	9	356	363	1	4	2	29
Wis.	20	47	-	70	70	-	1	1	29
W.N. CENTRAL	149	113	26	351	414	62	4	66	337
Minn.	16	13	5	58	85	3	2	2	106
Iowa	16	19	5	35	29	-	-	-	13
Mo.	88	62	7	179	228	36	2	40	16
N. Dak.	1	-	2	5	6	1	-	-	68
S. Dak.	-	8	1	25	21	16	-	7	95
Nebr.	22	7	2	9	16	2	-	1	10
Kans.	6	4	4	40	29	4	-	16	29
S. ATLANTIC	9,175	7,785	16	2,934	2,956	4	24	142	900
Del.	74	51	1	22	31	1	-	1	37
Md.	489	392	3	287	260	-	1	20	219
D.C.	445	233	-	131	99	-	1	-	5
Va.	267	194	-	266	296	2	9	12	246
W. Va.	34	6	-	52	75	-	-	2	69
N.C.	518	432	7	288	314	-	1	77	5
S.C.	463	503	2	323	303	-	-	15	61
Ga.	1,525	1,100	-	483	506	1	2	10	180
Fla.	5,360	4,874	3	1,082	1,072	-	10	5	78
E.S. CENTRAL	1,303	1,260	17	1,110	1,177	8	3	52	194
Ky.	43	13	7	254	275	4	1	15	76
Tenn.	583	516	7	326	334	3	-	26	55
Ala.	376	323	3	346	353	-	1	7	61
Miss.	301	408	-	184	215	1	1	4	2
W.S. CENTRAL	2,786	2,796	19	1,671	1,619	35	7	104	372
Ark.	160	176	1	184	192	21	-	18	60
La.	537	493	-	190	188	-	3	1	7
Okla.	104	99	6	161	158	12	-	75	25
Tex.	1,985	2,028	12	1,136	1,081	2	4	10	280
MOUNTAIN	529	470	24	346	405	10	7	11	248
Mont.	3	8	-	12	9	-	1	6	151
Idaho	2	5	3	13	25	-	-	1	8
Wyo.	1	1	-	2	2	2	-	3	31
Colo.	76	78	3	40	113	5	3	1	18
N. Mex.	39	40	-	65	64	2	1	-	7
Ariz.	108	227	9	158	156	-	2	-	29
Utah	11	19	9	18	16	1	-	-	4
Nev.	289	92	-	38	20	-	-	-	-
PACIFIC	4,439	5,132	29	2,617	2,899	5	91	4	255
Wash.	116	92	3	137	173	-	6	1	-
Oreg.	191	193	1	99	76	-	6	1	-
Calif.	4,099	4,835	25	2,251	2,490	3	76	2	247
Alaska	9	3	-	28	32	2	-	-	8
Hawaii	24	9	-	102	128	-	3	-	-
Guam	3	2	-	14	26	-	-	-	-
P.R.	413	621	-	149	195	-	4	-	47
V.I.	1	4	-	4	2	-	-	-	-
Amer. Samoa	-	-	-	3	7	-	1	-	-
C.N.M.I.	1	-	-	17	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending August 27, 1988 (34th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	650	465	114	34	16	21	41
Boston, Mass.	175	119	31	12	8	5	15
Bridgeport, Conn.	45	39	4	2	-	-	4
Cambridge, Mass.	33	25	4	3	1	-	1
Fall River, Mass.	19	14	5	-	-	-	1
Hartford, Conn.	94	60	17	8	2	7	4
Lowell, Mass.	39	32	6	-	-	1	2
Lynn, Mass.	15	11	2	1	1	-	-
New Bedford, Mass.	23	20	3	-	-	-	3
New Haven, Conn.	42	26	9	2	1	4	4
Providence, R.I.	44	30	12	-	-	2	-
Somerville, Mass.	4	2	-	1	1	-	-
Springfield, Mass.	44	33	7	2	-	2	2
Waterbury, Conn.	23	19	4	-	-	-	2
Worcester, Mass.	50	35	10	3	2	-	3
MID. ATLANTIC	2,904	1,800	622	306	95	78	137
Albany, N.Y.	50	33	7	6	2	2	2
Allentown, Pa.	12	9	2	-	1	-	1
Buffalo, N.Y.	93	63	20	7	1	-	13
Camden, N.J.	38	22	4	6	4	2	-
Elizabeth, N.J.	20	15	3	2	-	-	-
Erie, Pa.†	37	27	6	1	1	2	2
Jersey City, N.J.	39	17	12	3	5	2	-
N.Y. City, N.Y.	1,591	962	346	199	45	39	66
Newark, N.J.	52	23	14	11	3	1	-
Paterson, N.J.	35	21	8	3	1	2	1
Philadelphia, Pa.	483	295	115	35	24	13	24
Pittsburgh, Pa.†	67	41	16	8	1	1	-
Reading, Pa.	27	23	3	1	-	-	3
Rochester, N.Y.	111	74	18	10	3	6	12
Schenectady, N.Y.	33	28	4	1	-	-	1
Scranton, Pa.†	33	24	5	4	-	-	2
Syracuse, N.Y.	78	52	15	3	2	6	4
Trenton, N.J.	44	30	12	2	-	-	3
Utica, N.Y.	31	20	5	2	2	2	1
Yonkers, N.Y.	30	21	7	2	-	-	2
E.N. CENTRAL	2,341	1,518	489	163	95	76	95
Akron, Ohio	55	36	14	4	1	-	4
Canton, Ohio	32	19	11	1	1	-	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	148	96	28	8	10	6	9
Cleveland, Ohio	167	110	38	7	7	5	8
Columbus, Ohio	121	63	40	8	5	5	3
Dayton, Ohio	106	72	18	8	6	2	3
Detroit, Mich.	259	150	50	28	21	10	2
Evansville, Ind.	49	34	11	2	-	2	3
Fort Wayne, Ind.	56	43	7	2	-	3	1
Gary, Ind.	22	16	5	1	-	-	-
Grand Rapids, Mich.	52	36	10	1	1	4	3
Indianapolis, Ind.	190	128	40	12	7	3	6
Madison, Wis.	34	26	3	2	2	1	4
Milwaukee, Wis.	138	81	23	17	13	4	5
Peoria, Ill.	48	31	8	2	3	4	5
Rockford, Ill.	44	34	6	3	1	-	4
South Bend, Ind.	95	68	17	4	4	2	9
Toledo, Ohio	120	86	23	7	3	1	8
Youngstown, Ohio	42	27	12	1	-	2	-
W.N. CENTRAL	834	571	161	56	24	22	31
Des Moines, Iowa	92	66	15	7	3	1	4
Duluth, Minn.	28	21	6	-	-	1	3
Kansas City, Kans.	28	23	3	2	-	-	-
Kansas City, Mo.	108	74	22	9	2	1	7
Lincoln, Nebr.	20	14	5	1	-	-	1
Minneapolis, Minn.	178	115	37	18	5	3	8
Omaha, Nebr.	99	66	19	8	5	1	3
St. Louis, Mo.	150	97	32	6	5	10	-
St. Paul, Minn.	60	41	8	4	3	4	2
Wichita, Kans.§	71	54	14	1	1	1	3
S. ATLANTIC	1,257	728	261	164	45	57	48
Atlanta, Ga.	185	94	44	36	7	4	2
Baltimore, Md.	205	112	59	19	10	5	9
Charlotte, N.C.	74	52	10	5	3	4	2
Jacksonville, Fla.	116	78	19	9	5	5	4
Miami, Fla.	140	71	34	28	5	2	1
Norfolk, Va.	71	37	9	9	5	11	4
Richmond, Va.	81	49	16	8	1	7	5
Savannah, Ga.	59	41	12	6	-	-	6
St. Petersburg, Fla.	81	68	7	5	-	1	3
Tampa, Fla.	82	48	19	11	1	1	7
Washington, D.C.	129	56	25	23	8	17	2
Wilmington, Del.	34	22	7	5	-	-	3
E.S. CENTRAL	748	475	161	57	33	22	38
Birmingham, Ala.	144	88	22	15	11	8	2
Chattanooga, Tenn.	91	67	17	5	1	1	7
Knoxville, Tenn.	50	32	11	5	2	-	3
Louisville, Ky.	49	35	11	-	2	1	1
Memphis, Tenn.	165	107	32	14	5	7	12
Mobile, Ala.	55	31	13	5	4	2	4
Montgomery, Ala.	44	23	17	2	1	1	2
Nashville, Tenn.	150	92	38	11	7	2	7
W.S. CENTRAL	1,834	1,095	421	184	65	69	58
Austin, Tex.	57	30	15	6	2	4	4
Baton Rouge, La.	53	37	13	1	-	2	1
Corpus Christi, Tex.§	48	37	10	1	-	-	1
Dallas, Tex.	201	103	53	24	10	11	4
El Paso, Tex.	50	32	9	4	3	2	3
Fort Worth, Tex	92	60	14	8	3	7	4
Houston, Tex.§	831	487	193	104	28	19	22
Little Rock, Ark.	48	29	11	6	1	1	4
New Orleans, La.	129	72	34	11	5	7	-
San Antonio, Tex.	180	115	38	12	5	10	8
Shreveport, La.	44	24	9	3	7	1	2
Tulsa, Okla.	101	69	22	4	1	5	5
MOUNTAIN	660	434	126	43	32	25	29
Albuquerque, N. Mex.§	82	53	15	8	4	2	2
Colo. Springs, Colo.	33	23	5	2	-	3	3
Denver, Colo.	100	66	15	6	5	8	4
Las Vegas, Nev.	92	68	14	4	5	1	7
Ogden, Utah	23	16	6	-	1	-	3
Phoenix, Ariz.	141	87	32	10	6	6	3
Pueblo, Colo.	24	19	3	1	1	-	5
Salt Lake City, Utah	53	27	8	6	9	3	-
Tucson, Ariz.	112	75	28	6	1	2	2
PACIFIC	1,775	1,166	331	163	59	49	106
Berkeley, Calif.	22	19	3	-	-	-	2
Fresno, Calif.	54	39	6	4	1	4	7
Glendale, Calif.	14	9	2	-	2	-	-
Honolulu, Hawaii	87	64	12	4	6	1	12
Long Beach, Calif.	97	67	14	9	2	4	11
Los Angeles Calif.	441	266	97	55	17	3	16
Oakland, Calif.	87	48	20	10	5	4	6
Pasadena, Calif.	36	26	5	4	1	-	-
Portland, Oreg.	108	73	20	7	3	5	4
Sacramento, Calif.	161	113	25	9	6	8	20
San Diego, Calif.	138	89	28	11	5	3	9
San Francisco, Calif.	160	91	38	25	2	4	5
San Jose, Calif.	156	112	25	10	3	6	9
Seattle, Wash.	114	79	17	10	4	4	-
Spokane, Wash.	61	46	10	2	1	2	1
Tacoma, Wash.	39	25	9	3	1	1	4
TOTAL	13,003††	8,252	2,686	1,170	464	419	583

*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 3 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 available 4 weeks.

Current Trends

Measles — United States, 1987

In 1987, a provisional total of 3655 measles cases was reported to CDC, a 42% decrease from the 6282 cases reported in 1986 (*1*) (Figure 1). The 1987 incidence rate was 1.5 cases/100,000 population, compared with 2.7 cases/100,000 population in 1986.

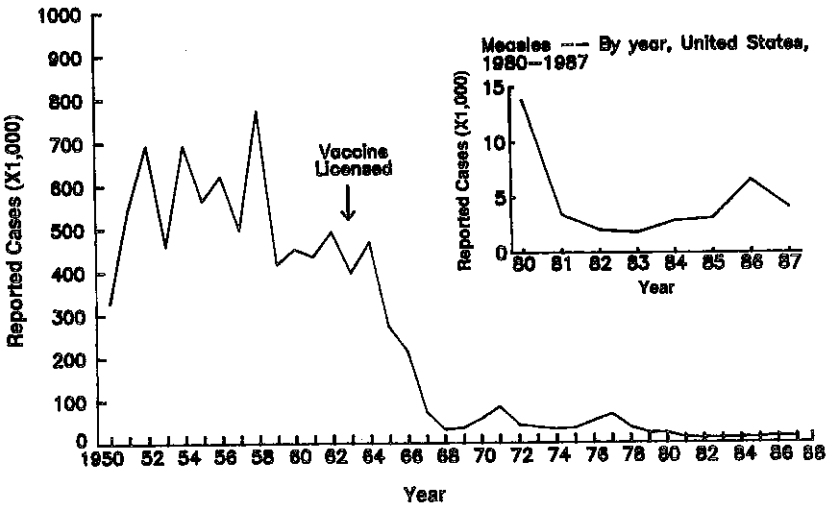
Detailed information was provided to CDC's Division of Immunization, Center for Prevention Services, on 3652 cases. Of these, 3312 (90.7%) met the standard clinical case definition for measles,* and 1106 (30.3%) were serologically confirmed. The usual seasonal pattern was observed, with the peak number of cases occurring from February through May (weeks 4–24) (Figure 2).

Three fourths (2759) of the cases were reported from New York City (469 cases) and seven states: California (809), Texas (452), New Mexico (318), Illinois (213), Missouri (190), New Hampshire (162), and Wisconsin (146). Incidence rates were >3.0/100,000 population in New York City (6.5) and eight states: New Mexico (21.5), New Hampshire (15.8), Montana (15.5), Delaware (5.1), Oregon (4.9), Vermont (4.8), Missouri (3.8), and Wisconsin (3.1). Forty-one states and 265 (8.4%) of the nation's 3138 counties reported measles cases, compared with 46 states and 347 (11.1%) counties in 1986.

There were 76 outbreaks (i.e., five or more epidemiologically related cases), which accounted for 3165 (86.7%) cases. Seven outbreaks with more than 100 cases each accounted for 1877 (51.4%) cases. Eighty-three cases (2.3%) were known to be imported from other countries. Of these, 44 were in U.S. citizens. An additional 88 (2.4%) cases were epidemiologically linked to imported cases within two generations of onset in the index patient.

*Fever ≥38.3 C (≥101 F), if measured; generalized rash lasting ≥3 days; and at least one of the following: cough, coryza, or conjunctivitis.

FIGURE 1. Measles, by year — United States, 1950–1987



Measles — Continued

In 1065 (29.2%) cases, the patients were <5 years of age (Table 1); 482 (13.2%) were <15 months of age (297 children <12 months of age and 185 children 12–14 months of age). The 15–19-year age group accounted for 28.7% of all cases. The incidence rate of measles decreased from 1986 to 1987 in all age groups. The highest incidence rates occurred in 0–4-year-olds and 15–19-year-olds.

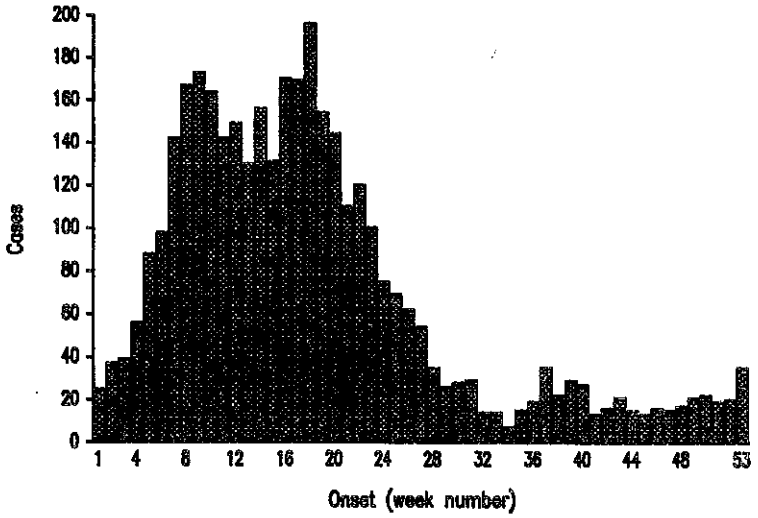
Complications were reported in 445 (12.2%) cases. Otitis media was reported in 209 (5.7%) cases; diarrhea, in 159 (4.4%); pneumonia, in 91 (2.5%); and encephalitis, in five (0.1%). Two hundred eighty-four (7.8%) of the reported patients were hospitalized. Four measles-attributable deaths were reported (death-to-case ratio of 1.1 deaths per 1000 cases) (*2,3*).

Of the 2451 (67.1%) patients for whom setting of transmission was reported, 1296 (52.9%) acquired measles in primary or secondary schools; 153 (6.2%), in medical settings; 141 (5.8%), in colleges or universities; 72 (2.9%), in child day care; 503 (2.0%), at home; and 286 (11.7%), in a variety of other settings.

A total of 1734 (47.5%) patients had been vaccinated on or after the first birthday, including 609 (16.7%) who were vaccinated at 12–14 months of age. One hundred sixty-nine (4.6%) had a history of vaccination before the first birthday, and 1749 (47.9%) were unvaccinated. Of the 2101 school-aged children 5–19 years of age, 1506 (71.7%) had been adequately vaccinated, including 579 (27.6%) who were vaccinated at 12–14 months of age. In contrast, of the 1065 preschool-aged children 0–4 years of age, 153 (14.4%) had been adequately vaccinated, including 20 (1.9%) vaccinated at 12–14 months of age (Table 2).

Measles cases are classified as preventable or nonpreventable. A case is defined as preventable if it occurs in a person for whom vaccine is indicated by current recommendations (*4,5*). Of the 3652 cases, 1010 (27.7%) were classified as preventable (*4*) (Table 2). From 1986 to 1987, the absolute number and proportion of cases that were preventable through vaccination decreased in all age groups except those ≥25 years of age. The highest proportion of cases that were preventable through vaccination occurred in adults 25–29 years old and in children 16 months–4 years old.

FIGURE 2. Measles cases, by week of rash onset — United States, 1987



Measles — Continued

In contrast, fewer than one fifth of cases in school-aged children 5–19 years of age were preventable through vaccination. However, 40.1% of all preventable cases occurred in this age group.

A total of 2642 cases were classified as nonpreventable. Of these, 1718 (65.0%) were in persons who had been vaccinated on or after the first birthday; 526 (19.9%) were in children too young for routine vaccination (<16 months of age); 216 (8.2%) were in persons with medical contraindications or exemptions under state law; 126 (4.8%) were in persons older than the recommended age for vaccination (born before 1957); 45 (1.7%) were international importations in non-U.S. citizens; and 11 (0.4%) were in persons with a prior physician diagnosis of measles (Table 3).

Reported by: Div of Immunization, Center for Prevention Svcs, CDC.

Editorial Note: The decrease in number of cases reported in 1987 reverses the trend of annual increases in measles incidence since the record-low year 1983, when 1497 cases were reported. The number of cases reported in 1987 represents a 99%

TABLE 1. Age distribution and estimated incidence rates* of measles — United States, 1986 and 1987

Age group (yrs)	1986			1987†			% Change
	No.	(%)	Rate	No.	(%)	Rate	
0–4	2454	(39.2)	13.0	1065	(29.2)	5.9	−54.6
5–9	675	(10.8)	3.9	337	(9.2)	1.9	−51.3
10–14	1313	(21.0)	8.1	717	(19.6)	4.3	−46.9
15–19	1168	(18.7)	6.3	1047	(28.7)	5.6	−11.1
20–24	290	(4.6)	1.4	205	(5.6)	1.0	−28.6
≥25	336	(5.4)	0.3	281	(7.7)	0.2	−33.3
Unknown	19	(0.3)	—	—	—	—	
Total	**6255**	**(100.0)**	**2.7**	**3652**	**(100.0)**	**1.5**	**−44.4**

*Cases per 100,000 population.
†Provisional data for 1987.

TABLE 2. Age distribution and preventability of measles cases — United States, 1986 and 1987

Age group	1986			1987*		
	Total	Preventable		Total	Preventable	
		No.	(%)		No.	(%)
≤15 mos	1229	0		526	0	
16 mos–4 yrs	1225	1019	(83.2)	539	345	(64.0)
5–9 yrs	675	237	(35.1)	337	64	(19.0)
10–14 yrs	1313	318	(24.2)	717	117	(16.3)
15–19 yrs	1168	372	(31.8)	1047	224	(21.4)
20–24 yrs	290	213	(73.4)	205	124	(60.5)
25–29 yrs	170	119	(70.0)	146	127	(87.0)
≥30 yrs	166	0		135	9	(6.7)
Total	**6236†**	**2278**	**(36.5)**	**3652**	**1010**	**(27.7)**

*Provisional data for 1987.
†In 1986, preventability status is not known for 19 cases.

Measles — Continued

reduction from the prevaccine era. Incidence rates in 1987 decreased from 1986 in all age groups; the largest decrease was in children <5 years of age. The overall decline observed in 1987 has continued into 1988; the provisional 1988 case count through week 27 is approximately 40% below the 1987 level. Reasons for the decline in measles cases may be multiple—secular trends, exhaustion of susceptibles in some areas from which large numbers of cases have previously been reported, or fewer importations in 1987.

As in previous years, almost one third of cases reported were classified as preventable, i.e., patients were eligible for vaccination but unvaccinated. Many of these cases occurred in preschool-aged children living in inner-city areas. Innovative strategies are needed to increase immunization levels in these populations.

Most cases reported in 1987, however, were classified as nonpreventable and occurred in school-aged children who had been vaccinated on or after the first birthday. Most of these cases probably result from primary vaccine failure, i.e., the failure to seroconvert following vaccination; there is little epidemiologic evidence to indicate that secondary vaccine failure or waning immunity is a major problem. The approximate primary measles vaccine failure rate of 5% (range 2%–10%) may provide enough susceptibles to sustain an outbreak among highly vaccinated populations (*6*) in some settings. Moreover, persons vaccinated at 12–14 months of age are at slightly higher risk for measles than are persons vaccinated at ≥15 months (*7*).

The four deaths reported in 1987 are the first measles-attributable deaths reported to the Division of Immunization since 1985. All deaths occurred in immunocompromised patients, including two children with AIDS. Since large measles outbreaks have occurred in areas with high prevalence of human immunodeficiency virus (HIV) infections and since HIV-infected persons appear to be at increased risk for serious complications (*3*), the Immunization Practices Advisory Committee (ACIP) recom-

TABLE 3. Classification of measles cases — United States, 1987*

Classification	No.	% of total	% of nonpreventable
Nonpreventable			
Persons <16 mos of age	526	14.4	19.9
Persons born before 1957	126	3.5	4.8
Adequately vaccinated†	1718	47.0	65.0
Prior physician diagnosis	11	0.3	0.4
Non-U.S. citizens	45	1.2	1.7
Exemptions	216	5.9	8.2
Medical (22)			
Religious (59)			
Philosophic (108)			
Nonspecific (27)			
Subtotal	2642	72.3	100.0
Preventable	**1010**	**27.7**	
Total	**3652**	**100.0**	

*Provisional data.
†Does not include four adequately vaccinated patients born before 1957 and 12 adequately vaccinated patients <16 months of age.

Measles – Continued

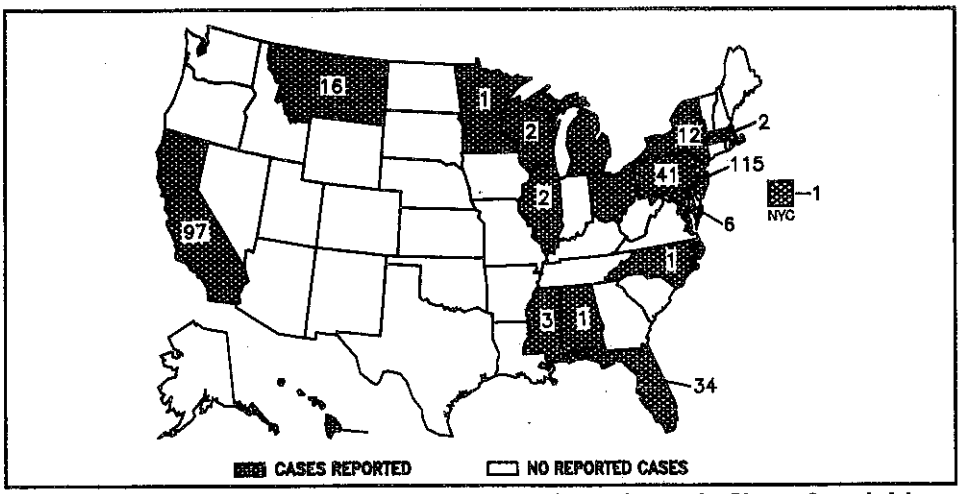
mends that asymptomatic HIV-infected children be vaccinated with measles, mumps, and rubella (MMR) vaccine and that consideration be given to vaccinating symptomatic HIV-infected children (*8*).

A group of expert consultants was recently convened by CDC to consider the problem of continuing measles transmission in the United States. The consultants felt that the goal of measles elimination should be pursued. They reviewed the two predominant patterns of measles: 1) measles in unvaccinated preschool-aged children—a failure to implement the current strategy, and 2) infections in adequately vaccinated school-aged children—a failure of the current strategy. These two patterns require different solutions. Increased efforts are needed to vaccinate preschool-aged children. Vaccination schedules may need to be modified in selected high-risk areas. Proposed changes include lowering the recommended age for routine vaccination and/or instituting a two-dose schedule. Aggressive revaccination strategies may also be necessary to control outbreaks among highly vaccinated school-aged populations. These recommendations are being evaluated by ACIP. In the meantime, efforts should continue to ensure that all susceptible persons are vaccinated and that appropriate surveillance and outbreak-control procedures are practiced.

References

1. CDC. Measles—United States, 1986. MMWR 1987;36:301–5.
2. CDC. Measles—United States, first 26 weeks, 1987. MMWR 1988;37:53–7.
3. CDC. Measles in HIV-infected children, United States. MMWR 1988;37:183–6.
4. CDC. Classification of measles cases and categorization of measles elimination programs. MMWR 1983;31:707–11.
5. Immunization Practices Advisory Committee. Measles prevention. MMWR 1987;36:409-18, 423-5.
6. Gustafson TL, Lievens AW, Brunell PA, Moellenberg RG, Buttery CMG, Sehulster LM. Measles outbreak in a fully immunized secondary-school population. N Engl J Med 1987;316:771–4.
7. Orenstein WA, Markowitz L, Preblud SR, Hinman AR, Tomasi A, Bart KJ. Appropriate age for measles vaccination in the United States. Dev Biol Stand 1986;65:13–21.
8. Immunization Practices Advisory Committee. Immunization of children infected with human immunodeficiency virus—supplementary ACIP statement. MMWR 1988;37:181–3.

FIGURE I. Reported measles cases — United States, Weeks 30-33, 1988



The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

☆U.S. Government Printing Office: 1988-530-111/81523 Region IV

HHS Publication No. (CDC) 88-8017

Knowledge of AIDS Among Female Hispanic Migrant Farmworkers in Virginia

By Thalia M. Vasilion, MS, RN, FNP

Introduction

A descriptive correlational study was done to assess the AIDS knowledge and beliefs of female Hispanic farmworkers on the eastern shore of Virginia. The study was conducted during the fall of 1990 at Delmarva Rural Ministries migrant health project.

Methodology

The research was designed to determine if there was a relationship between questionnaire responses, test scores, and various demographic variables. The instrument contained 34 items with three subscales: knowledge, misconceptions of casual transmission, and perceived susceptibility. Possible responses included True, False, and Don't Know for all items. The instrument was made available in both Spanish and English, and was assessed for validity and reliability by its developers.[1,2]

A non-probability sampling method was used due to the exclusive and diverse nature of this population. Women were asked if they would like to participate at the time of a clinic visit; 60 women participated in the study. A translator was used during the interview if participants could not speak English or read Spanish. Additionally, various demographic information was obtained.

The data were analyzed by several methods. Demographic data were evaluated qualitatively and quantitatively, to provide sample characteristics. The frequency of responses for each survey item was analyzed. Test scores were evaluated with selected demographic variables to determine if differences did exist, and differences were further analyzed to determine significance. The significant difference was determined using the Spearman's rank order correlation coefficient.

Summary/Findings

The sample consisted of 50 percent between the ages of 15 and 24, 33 percent aged 24–34, and 12 percent aged 35–54. Seventy-three percent were born in Mexico, 13 percent in the U.S., and 4 percent each in Guatemala and Nicaragua. Sixty-two percent reported 1–6 years of education, 22 percent 7–11 years, 8 percent high school, 5 percent no school, and 3 percent some college. Sixty-five percent were married.

Fifty percent had lived in the U.S. for over four years, 35 percent 1–2 years, 8 percent less than one year, and 7 percent 3–4 years. Additionally, 30 percent reported having worked as a farmworker for less than six months, 30 percent 1–2 years, 22 percent over six years, 10 percent 5–6 years, and 8 percent 3–4 years. Participants were asked to select an source where they would like to receive more information about AIDS; 33 percent selected a medical facility, 28 percent television, 17 percent brochure or booklet, 15 percent newspaper or magazine, and 7 percent AIDS hotline.

Evaluation of the knowledge subscale survey items showed that 52 percent answered incorrectly that AIDS could not be transmitted from women to men; 52 percent did not know if drugs were available to treat AIDS; 58 percent did not know if a vaccine was available; and 50 percent did not know AIDS could damage the brain or that it was a condition in which the body could not fight off disease. Seventy-two percent or more of the sample correctly answered test items reflecting misconceptions, except for the item which stated that you can get AIDS by being around someone who has it: 39 percent answered this item incorrectly and 23 percent didn't know. Evaluation of perceived susceptibility showed that 50 percent did not know if they were less likely to get AIDS than most people.

Further analysis of the survey included total scores for all three subscales and correlational analysis with the demographic variables. Positive correlations with significant differences were found between all three test scores and the variable of education. A positive correlation was also found between the misconception score and years in the U.S.

The results revealed that the population as a whole had some general information about AIDS; approximately 50 percent were able to answer 14 of the 26 knowledge items correctly. However, specific information about transmission routes, causes, and treatments was lacking. Over half the sample were unaware that AIDS could be transmitted from women to men or that one could not be infected by giving blood. Almost half the sample did not know that a cure has not been developed, and a third answered this item incorrectly. Additionally, more than half the sample were not sure if vaccines were available. This population also had greater perceived susceptibility, possibly due to knowledge deficits.

Differences were found between knowledge scores and respondent age. Women under 25 years old had lower knowledge scores than women 25 or over. Lower knowledge scores were also found for participants with fewer years of education; however, the findings also revealed that less educational attainment did not necessarily indicate lower levels of knowledge. Respondents born in the U.S. had greater knowledge than those born in other countries. In addition, participants who had been in the U.S. longer than four years had greater knowledge than those in the U.S. less than two years.

Conclusions/Recommendation

The results of this study have contributed to the recognition that AIDS knowledge deficits are not uncommon in the farmworker population. The study provides valuable information to assist health care providers in understanding special needs for this group and to help develop educational programs and identify ways to best disseminate this knowledge. Although knowledge is only one factor in promoting behavior change, the educational encounter after survey completion by respondents in this project sug-

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New Jersey Study

continued from page 1

selling and testing were offered in camps following the educational programs, 74.3 percent of the participants sought counselling and testing.

The 3.2 percent HIV-positive prevalence documented in New Jersey farmworkers is eight times the national rate of 0.4 percent. It is also eight times the rate found in a 1988 study of farmworkers conducted by the Centers for Disease Control. That study tested only workers seeking health care, a variable which would generally tend to produce an upward-skewed prevalence rate.

It is clear that male Puerto Rican migrant farmworkers are at significant risk for contracting the HIV virus, and accessible HIV counselling/testing programs should focus on them. Too few women and Mexican farmworkers were tested to determine if they also should be targeted for priority testing. The project demonstrated that farmworkers—in this case women—can be very effective AIDS educators and HIV counsellors.

For more information on this study contact Mark Lyons at (609)-881-2507. ❖