CENTERS FOR DISEASE CONTROL

October 31, 1986 / Vol. 35 / No. 43

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Current Trends

Surveillance of Hemophilia-Associated Acquired Immunodeficiency Syndrome

As of September 15, 1986, a total of 238 cases of hemophilia-associated acquired immunodeficiency syndrome (AIDS) have been reported to CDC through state health departments, hemophilia treatment centers (HTCs), and physicians. Of the 238 patients, 212 (89%) had hemophilia A (coagulation factor VIII deficiency); 16 (7%), hemophilia B (factor IX deficiency); seven (3%), von Willebrand's disease; two, an acquired inhibitor (antibody) to factor VIII; and one, a factor V deficiency. All but seven (3%) of the patients were male. Thirteen patients were known to have had other risk factors for AIDS in addition to a hematologic disease. The 238 patients resided in 38 states; almost half lived in California, New York, Pennsylvania, New Jersey, or Missouri. The total number of cases represents a cumulative incidence of 1.6 cases of AIDS/100 hemophiliacs in the United States (*1*).

The first AIDS patient with underlying coagulation disorders was diagnosed as having *Pneumocystis carinii* pneumonia in 1981. Later it was recognized that this patient had AIDS. Since then, the number of hemophilia-associated AIDS cases has increased each year. The reported number of cases among hemophiliacs does not appear to be increasing at an exponential rate (Figure 1); however, in 1985, 92% of persons with hemophilia A and 52% of those with hemophilia B in a U.S. hemophilia cohort had antibodies to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV)*, suggesting exposure to the virus or to virus particles (*2*). HTLV-III/LAV seropositivity in this cohort was associated with declining T_{helper} lymphocyte numbers and with declining T_{helper}-to-$T_{suppressor}$ cell ratios. Because of these high rates of seroprevalence and immunology findings, concern had been expressed that the recent incidence of hemophilia-associated AIDS may be misleadingly low because of a decline in reporting.

To determine the completeness of reporting, the Division of Host Factors (DHF), Center for Infectious Diseases, CDC, and the National Hemophilia Foundation (NHF) surveyed all United States HTCs, local NHF chapters, and physicians known to have patients with hemophilia (*3*). On May 14, 1986, each HTC/physician was sent a list of persons with hemophilia-associated AIDS according to DHF records as of May 1, 1986. Since patients' names are not used at DHF, cases were identified only by the patient's date of birth, the date of diagnosis, and the

*The AIDS virus has been variously termed human T-lymphotropic virus type III (HTLV-III/LAV), lymphadenopathy-associated virus (LAV), AIDS-associated retrovirus (ARV), or human immunodeficiency virus (HIV). The designation "human immunodeficiency virus" (HIV) has been accepted by a subcommittee of the International Committee for the Taxonomy of Viruses as the appropriate name for the retrovirus that has been implicated as the causative agent of AIDS (Science 1986;232:697).

HTLV-III/LAV – Continued

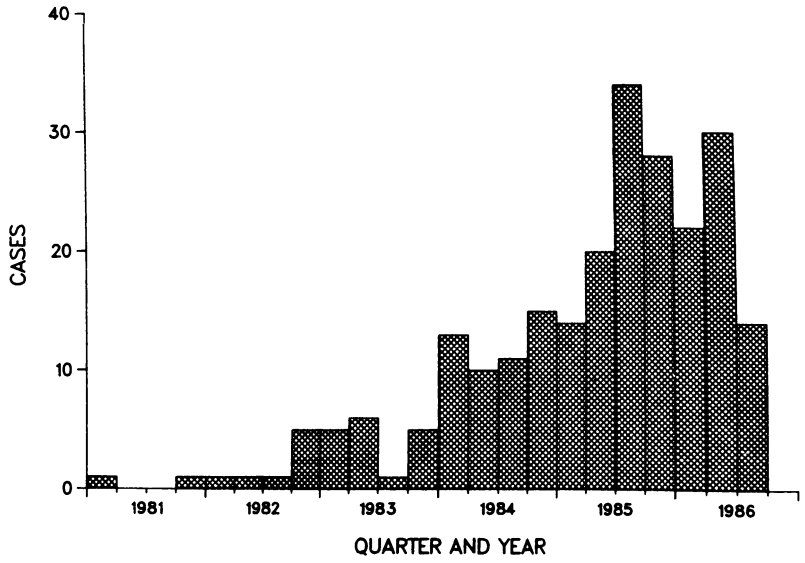
nature of the AIDS diagnosis. The HTCs/physicians were asked to add to this list any other known cases—confirmed or suspected—among persons with hemophilia. DHF personnel telephoned all HTCs/physicians who had not responded by August 1, 1986.

A total of 240 HTCs/physicians and 34 NHF chapters were sent letters, and written responses were received from 61 (25%) HTCs/physicians. Information was obtained by telephone from 209 of the 213 addressees who had not responded; four NHF chapters could not be reached. In addition, DHF personnel contacted the state health departments of three states that had no reported cases and no HTCs or physicians listed in the NHF directory. From these efforts, eight previously unreported cases of AIDS among persons with hemophilia were identified. Two patients were from California (diagnosis of AIDS 12/84 and 7/85); two were from Oregon (diagnosis of AIDS 3/86 and 7/86); and one each from Colorado (diagnosis of AIDS 3/85), Missouri (5/85), New York (4/85), and Virginia (1/86). In four instances, the physicians assumed that the cases had been reported to the appropriate state health departments. In the other instances, two cases involved physicians who did not realize their legal responsibility to report cases of AIDS to the state; one case involved a postmortem diagnosis of opportunistic infection, of which the physician had been unaware; and one case involved an acquired inhibitor to factor VIII, which the physician did not realize constituted a case of hemophilia-associated AIDS.

Reported by National Hemophilia Foundation and associated Hemophilia Treatment Centers; Div of Host Factors, Center for Infectious Diseases, CDC.

Editorial Note: National surveillance for AIDS cases among persons with hemophilia is maintained through the receipt of standard AIDS case report forms submitted by the state health departments to CDC and through reports (without names) sent directly to DHF by physicians

FIGURE 1. Cases of hemophilia-associated acquired immunodeficiency syndrome, by quarter of diagnosis — United States, January 1, 1981-September 15, 1986*



*Recently diagnosed cases may not be included because of a lag time in reporting.

HTLV-III/LAV – Continued

and nurses who care for patients with hemophilia. In the latter case, information is immediately shared with the state health department. The eight unreported cases identified in the CDC-NHF survey represent approximately 3% of all reported hemophilia-associated AIDS cases in the United States. This approximates the percentage of such cases that were reclassified according to the case definition for AIDS revised in 1985 (*4*).

In interpreting the findings of this survey, it should be noted that approximately 50%-60% of persons with hemophilia in the United States receive care through HTCs or hematologists (CDC data, unpublished). However, this selection bias probably does not significantly distort the results of the survey, because hemophiliacs at greatest risk for contracting AIDS, i.e., those who require extensive concentrated clotting-factor replacement (*5*), are most likely to be followed by these health care providers. The survey could not determine willingness/unwillingness to perform confirmatory diagnostic procedures such as esophagoscopy or lung biopsy in the hemophiliac population. Conversations with HTC personnel and physicians, however, suggest that confirmatory procedures are usually done. Finally, this approach to validation of the surveillance system assumes that physicians who do not initially choose to report AIDS cases (e.g., for reasons of confidentiality) would do so when contacted personally. This may not be the case. Nevertheless, the survey described here and other studies (*6,7*) suggest that surveillance of AIDS (as currently defined)—particularly of hemophiliacs—is relatively complete.

References

1. US Department of Health, Education, and Welfare. Study to evaluate the supply-demand relationships for AHF and PTC through 1980. Washington, DC: US Department of Health, Education, and Welfare, 1977; publication no. 77-1274.
2. Jason J, Holman RC, Kennedy MS, Evatt BL. Longitudinal assessment of hemophiliacs exposed to HTLV-III/LAV. In: Program and abstracts of the 26th Interscience Conference on Antimicrobial Agents and Chemotherapy. New Orleans, Louisiana;1986:97.
3. National Hemophilia Foundation. Directory of hemophilia treatment facilities, 1986 edition. New York: National Hemophilia Foundation, 1986.
4. CDC. Revision of the case definition of acquired immunodeficiency syndrome for national reporting—United States. MMWR 1985;34:373-5.
5. Gjerset GF, McGrady G, Counts RB, Martin PJ, Jason J, Kennedy S, Evatt B, Hansen JA. Lymphadenopathy-associated virus antibodies and T cells in hemophiliacs treated with cryoprecipitate or concentrate. Blood 1985;66:718-20.
6. Chamberland ME, Allen JR, Monroe JM, et al. Acquired immunodeficiency syndrome in New York City. Evaluation of an active surveillance system. JAMA 1985;254:383-7.
7. Hardy AM, Starcher ET, Druker J, Krystal AR, Day J, Kelly C. Using death certificates to determine the level of AIDS case reporting. Second International Conference on AIDS. Paris, France, June 23-25, 1986.

International Notes

Imported Paralytic Poliomyelitis — United States, 1986

In May 1986, a 29-year-old California woman contracted paralytic poliomyelitis while traveling in Asia. She had worked and traveled in Nepal from January through May 2, and she visited Burma between May 3 and May 9. On May 10, she traveled to Thailand, where she had onset of fever (a temperature of 102 F), malaise, and a feeling of weakness lasting 1 day. On May 16, she again had symptoms: fever (a temperature of 104.2 F), headache, and low back pain. On May 17, she experienced weakness in the lower extremities (right more than

Poliomyelitis — Continued

left), constipation, and urinary retention. On May 19, she was unable to walk and was hospitalized in Bangkok. A flaccid paralysis of the lower extremities without sensory or bulbar involvement was noted. Cerebrospinal fluid contained 90 leukocytes, of which 93% were lymphocytes.

The patient returned to the United States on June 6, confined to a wheelchair. On examination, she was noted to have flaccidity and no deep-tendon reflexes in the right lower extremity. Her sensory modalities were intact; constipation and urinary retention had resolved. Poliovirus type 1 was isolated from stool collected on June 22 and subsequently characterized as "wild-like" by genomic sequencing (*1*). Electromyography and nerve-conduction studies performed on June 26 were consistent with axonal neuropathy of poliomyelitis. The results of serologic tests for immunoglobulin IgG, IgA, and IgM were within normal ranges. At 60 days after the onset of weakness, she had residual paralysis of the right leg below the knee.

The patient had a vaccination history of three doses of inactivated poliovirus vaccine (IPV) in the late 1950s and one "sugar cube" (not known whether it contained a monovalent [MOPV] or a trivalent oral poliovirus vaccine [OPV]) at a mass clinic in the early 1960s. The patient had traveled previously in Asia and elsewhere, but had not received any doses of poliovirus vaccine before any departures.

Reported by J Jones, Placer County Health Officer, J Chin, State Epidemiologist, California Dept of Health Svcs; Div of Immunization, Center for Prevention Services, CDC.

Editorial Note: The last cases of paralytic poliomyelitis acquired in the United States and caused by wild poliovirus occurred in 1979. From 1980 through 1985, four reported cases of paralytic poliomyelitis caused by wild virus occurred among U.S. citizens—all persons returning from developing countries. These imported cases represent 7% of the 55 cases of paralytic poliomyelitis reported during the 6-year period 1980-1985. The other 51 cases were vaccine associated. During the preceding 6-year period (1974-1979), nine (12%) of 78 reported cases of paralytic poliomyelitis were imported. Of the 13 persons who had imported cases reported between 1974 and 1985, six (46%) were over 18 years of age. The vaccination status of the 13 patients was as follows:

a) seven had no history of poliovirus vaccination;
b) four had received one or two doses of poliovirus vaccine (one had had two doses of OPV; two, one dose of OPV; and one, one dose of IPV); and
c) two had completed at least a primary series (one with three doses of OPV and the other with five doses of IPV, three doses of MOPV, and one dose of OPV).

In addition, some inappropriately immunized U.S. residents and others may become infected asymptomatically while in an area with endemic poliomyelitis and may excrete wild polio virus temporarily after entering the United States (*2*).

Worldwide, 24,275 cases of paralytic poliomyelitis were reported to the World Health Organization (WHO) in 1984 (*3*). WHO's Southeast Asia region accounted for 15,167 cases (63% of the world total); followed by 4,513 cases (19%) in the Western Pacific region; 1,959 cases (8%) in the Eastern Mediterranean region; 1,833 cases (8%) in the African region; 571 cases (2%) in the Americas; and 238 cases (1%) in Europe. The global surveillance data doubtless reflect substantial underreporting, but provide useful information on trends.

The widespread use of OPV through the WHO Expanded Program on Immunization (EPI) is probably responsible for the observed downward trend in the incidence of poliomyelitis throughout the world—and thus for the probable reduction in recent years of the risk that individual travelers would be exposed to wild virus in some countries. Conversely, the trend among U.S. citizens toward more frequent international travel may lead to a greater overall

Poliomyelitis — Continued

risk of exposure to wild poliovirus. In 1983, an estimated 5 million U.S. citizens visited developing countries.

Travelers to countries with endemic or epidemic poliomyelitis should be fully vaccinated (*3,4,5*). The only countries currently considered free of endemic wild poliovirus circulation are the United States, Canada, Japan, Australia, New Zealand, and most of Eastern and Western Europe. Before visiting other countries, every traveler should have received, at a minimum, a complete primary series of vaccinations (Table 1). In addition, the Immunization Practices Advisory Committee (ACIP) recommends that persons who have previously completed a primary series receive an additional dose of poliovirus vaccine, generally as OPV, before travel (*4*).

Persons who have not had a primary series and who have less than 4 weeks before beginning international travel should receive one dose of OPV regardless of age. Such travelers who are under 18 years of age should complete the primary series, at the recommended intervals, whether they remain in the foreign country or return to the United States. Persons 18 years and older should complete the primary series only if they remain in the foreign country or plan to travel again to a country with endemic poliomyelitis.

If at least 4 weeks remain before departure, inadequately vaccinated persons 18 years of age and older should receive, at intervals of no less than 4 weeks, additional doses of IPV up to the four recommended to complete a primary series. IPV is preferred to OPV for adults—especially those with no history of poliovirus vaccination, because the risk of vaccine-associated paralysis following OPV is slightly higher for adults than for children.

If time permits, infants and children under 2 years of age traveling to a country with endemic disease should receive at least three doses of OPV, since virtually all persons vaccinated with three doses seroconvert to all three poliovirus serotypes (*6*). Intervals between doses may be reduced to 4 weeks to maximize immunization status before departure. If the child is under 6 weeks of age, a dose of OPV should be given before travel, but should not be counted as part of the three-dose primary series (*3*). Thereafter, if the infant remains in a country with endemic disease, the primary schedule recommended by the EPI, three doses given at 4-week intervals, should be followed (*7*).

Poliomyelitis among travelers is preventable. Therefore, it is important that health-care providers, tour operators, and travel agents alert travelers to the potential risk of paralytic poliomyelitis in developing countries and that increased efforts be made to comply with published poliomyelitis vaccination recommendations (*4,5,8,9*).

TABLE 1. Alternative poliomyelitis vaccination schedules recommended by the Immunization Practices Advisory Committee (ACIP) for a primary series*

Doses	Oral poliovirus vaccine (OPV)	Inactivated poliovirus vaccine (IPV)
Primary 1	≥6 weeks of age	≥6 weeks of age
Primary 2	6-8 weeks later	4-8 weeks later
Primary 3	6 weeks-12 months later	4-8 weeks later
Primary 4		6-12 months later

*OPV is the vaccine of choice for all persons < 18 years of age, if there are no contraindications to vaccination with a live-virus vaccine. IPV is the vaccine of choice for unvaccinated persons ≥18 years of age.

Poliomyelitis — Continued

References

1. Rico-Hesse R, Pallansch MA, Nottay BK, Kew OM. Natural distribution of wild type 1 poliovirus genotypes. In: Brinton MA, Rueckert R, eds. Positive strand RNS viruses. UCLA Symposia on Molecular and Cellular Biology, new series, vol. 54. New York: Alan R. Liss, 1986.
2. Paul JR. Epidemiology of poliomyelitis. In: Debre R, et al. Poliomyelitis. Geneva: WHO Monograph Series. 1955;26:9-29.
3. WHO. Poliomyelitis in 1984. Part I. Weekly Epidemiological Record 1986;61:229-33.
4. ACIP. Poliomyelitis prevention. MMWR 1982;31:22-6, 31-4.
5. ACIP. Adult immunization. MMWR 1984;33:1S-68S.
6. McBean AM, Thoms ML, Johnson RH, et al. A comparison of the serologic responses to oral and injectable trivalent oral poliovirus vaccines. Rev Inf Dis 1984;6(supp.2):S552-5.
7. WHO. Expanded programme on immunization. Weekly Epidemiological Record 1985;60:13-6.
8. Committee on Immunization, American College of Physicians. Guide for adult immunization. Philadelphia, Pennsylvania: American College of Physicians, 1985.
9. CDC. Health information for international travel, 1986. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, 1986. HHS publication no. (CDC) 86-8280.*

*Available from the U.S. Government Printing Office, Washington, D.C., 20402.

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

Disease	43rd Week Ending			Cumulative, 43rd Week Ending		
	Oct. 25, 1986	Oct. 26, 1985	Median 1981-1985	Oct. 25, 1986	Oct. 26, 1985	Median 1981-1985
Acquired Immunodeficiency Syndrome (AIDS)	309	103	N	10,781	6,535	N
Aseptic meningitis	352	307	307	8,406	8,460	8,049
Encephalitis: Primary (arthropod-borne & unspec.)	34	38	41	999	1,081	1,272
Post-infectious	-	2	1	84	108	78
Gonorrhea: Civilian	18,800	18,841	18,575	732,983	735,590	746,297
Military	396	501	520	13,893	17,606	20,263
Hepatitis: Type A	546	569	535	18,441	18,642	18,642
Type B	527	572	486	21,130	21,446	19,649
Non A, Non B	70	85	N	2,871	3,412	N
Unspecified	88	126	152	3,697	4,749	6,073
Legionellosis	27	16	N	612	619	N
Leprosy	3	2	3	203	295	200
Malaria	34	19	16	946	866	866
Measles: Total*	60	9	28	5,685	2,583	2,426
Indigenous	51	8	N	5,393	2,155	N
Imported	9	1	N	292	428	N
Meningococcal infections: Total	32	39	44	2,024	1,973	2,264
Civilian	32	39	44	2,022	1,967	2,253
Military	-	-	-	2	6	11
Mumps	180	52	52	4,226	2,475	2,743
Pertussis	291	138	33	3,449	2,895	1,998
Rubella (German measles)	4	4	12	443	578	855
Syphilis (Primary & Secondary): Civilian	729	549	590	21,980	22,289	25,464
Military	6	1	9	138	142	325
Toxic Shock syndrome	5	4	N	285	314	N
Tuberculosis	468	440	492	18,085	17,536	19,323
Tularemia	3	6	6	126	158	231
Typhoid fever	5	5	7	257	317	333
Typhus fever, tick-borne (RMSF)	19	12	8	707	643	924
Rabies, animal	59	124	115	4,549	4,510	5,198

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1986		Cum 1986
Anthrax	-	Leptospirosis	27
Botulism: Foodborne (Okla. 1)	12	Plague	7
Infant	40	Poliomyelitis, Paralytic	1
Other	1	Psittacosis (Pa. 2, Ala. 1)	81
Brucellosis (Ill. 1, Nebr. 1, Miss. 1, Ark. 1, Calif. 1)	72	Rabies, human	-
Cholera (Calif. 1)	3	Tetanus (Mich. 1, Md. 1)	57
Congenital rubella syndrome	10	Trichinosis (Va. 1)	31
Congenital syphilis, ages < 1 year	107	Typhus fever, flea-borne (endemic, murine) (Tex. 7)	44
Diphtheria	-		

*Four of the 60 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 October 25, 1986 and October 26, 1985 (43rd Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1986	1986	Cum 1986	Cum. 1986	Cum. 1986	Cum. 1985	1986	1986	1986	1986	1986	Cum 1986
UNITED STATES	10,781	352	999	84	732,983	735,590	546	527	70	88	27	203
NEW ENGLAND	432	10	24	3	19,429	18,793	15	40	-	3	-	7
Maine	18	1	-	-	708	964	1	-	-	-	-	-
N H	10	-	2	-	464	472	-	-	-	-	-	-
Vt	4	-	4	2	225	274	1	1	-	-	-	-
Mass	237	3	5	-	7,293	7,667	5	23	-	2	-	7
R I	28	2	-	-	1,504	1,497	1	3	-	-	-	-
Conn	135	4	13	1	9,235	7,919	7	13	-	1	-	-
MID ATLANTIC	3,937	26	93	7	125,034	106,672	19	33	4	21	-	14
Upstate N Y	386	11	33	4	15,111	14,582	5	12	-	2	-	1
N Y City	2,673	7	18	-	72,315	52,666	-	7	-	15	-	12
N J	613	8	10	-	15,916	16,104	14	14	4	4	-	-
Pa	265	-	32	3	21,692	23,320	-	-	-	-	-	1
E N CENTRAL	638	95	300	11	96,504	97,403	32	75	8	1	6	5
Ohio	131	54	116	3	24,799	26,158	5	17	2	1	3	-
Ind	59	9	74	3	10,344	10,378	5	37	2	-	-	-
Ill	300	-	43	4	23,733	23,532	11	4	1	-	-	4
Mich	116	32	46	1	30,677	27,840	11	17	3	-	3	1
Wis	32	-	21	-	6,951	9,495	-	-	-	-	-	-
W N CENTRAL	204	14	69	9	31,318	34,251	13	7	1	-	2	3
Minn	72	6	31	-	4,498	5,137	1	2	-	-	1	1
Iowa	17	-	20	-	3,173	3,631	1	-	-	-	-	-
Mo	71	2	1	-	15,793	16,553	-	2	-	-	-	-
N Dak	2	-	4	-	271	239	-	-	-	-	-	-
S Dak	2	-	11	-	664	659	-	-	-	-	-	-
Nebr	10	1	-	1	2,370	2,858	1	2	-	-	-	-
Kans	30	5	2	8	4,549	5,174	10	1	1	-	1	2
S ATLANTIC	1,496	84	132	31	190,378	192,135	56	135	11	6	11	2
Del	20	1	6	-	3,184	3,676	5	1	-	-	-	-
Md	159	6	29	1	22,291	24,164	9	9	5	1	-	-
D C	195	-	-	1	13,990	12,904	1	1	-	-	-	-
Va	128	13	36	1	15,786	16,110	3	19	-	1	1	1
W Va	7	1	42	-	1,854	2,201	2	4	1	-	-	-
N C	63	19	17	2	29,403	30,318	6	20	2	2	2	-
S C	38	-	-	-	16,398	18,309	1	13	-	-	-	-
Ga	198	10	-	1	31,507	37,712	8	33	-	-	3	-
Fla	688	34	2	25	55,965	46,741	21	35	3	2	5	1
E S CENTRAL	129	17	58	4	58,947	63,216	5	16	3	2	1	1
Ky	25	4	28	1	6,468	7,237	-	3	1	-	-	-
Tenn	63	8	7	1	22,401	24,200	-	4	1	2	-	-
Ala	24	4	22	2	17,291	18,891	2	6	-	-	-	1
Miss	17	1	1	-	12,787	12,888	3	3	1	-	1	-
W S CENTRAL	929	43	153	6	85,942	93,110	107	66	12	30	4	19
Ark	27	-	-	2	8,283	8,989	-	-	-	-	-	1
La	130	-	9	-	15,077	17,689	7	12	1	-	-	1
Okla	39	2	19	-	9,920	10,246	9	8	1	2	2	-
Tex	733	41	125	4	52,662	56,186	91	46	10	28	2	17
MOUNTAIN	278	13	34	1	21,729	23,057	65	55	5	4	1	11
Mont	4	-	1	1	576	641	1	2	2	-	-	-
Idaho	3	-	-	-	740	784	4	2	-	-	-	-
Wyo	4	-	2	-	456	533	-	-	-	-	-	-
Colo	132	1	4	-	5,572	6,681	10	8	-	3	-	3
N Mex	21	-	3	-	2,273	2,631	13	22	1	-	-	-
Ariz	68	4	16	-	6,976	6,891	28	10	1	-	1	5
Utah	17	7	6	-	910	1,098	4	5	1	-	-	1
Nev	29	1	2	-	4,226	3,798	5	6	-	1	-	2
PACIFIC	2,738	50	136	12	103,702	106,953	234	100	26	21	2	141
Wash	140	-	11	-	7,591	8,379	-	-	-	-	-	17
Oreg	50	-	-	-	4,414	5,378	39	18	3	-	-	-
Calif	2,493	45	118	12	88,376	89,200	192	78	23	21	2	95
Alaska	12	2	6	-	2,264	2,554	3	3	-	-	-	-
Hawaii	43	3	1	-	1,057	1,442	-	1	-	-	-	29
Guam	-	-	-	-	172	169	-	-	-	-	-	1
P R	77	-	5	1	2,012	2,631	2	16	-	-	-	7
V I	3	-	-	-	233	353	-	-	-	-	-	-
Pac Trust Terr	-	-	-	-	408	766	2	-	-	-	-	43
Amer Samoa	-	-	-	-	44	-	-	-	-	-	-	2

N Not notifiable U Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending October 25, 1986 and October 26, 1985 (43rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	1986	Cum. 1986	Cum. 1985
UNITED STATES	946	51	5,393	9	292	2,583	2,024	180	4,226	291	3,449	2,895	4	443	578
NEW ENGLAND	60	1	83	5	20	126	143	2	60	2	141	184	-	9	12
Maine	2	-	12	-	1	1	25	-	-	-	2	9	-	-	-
N.H	3	-	43	-	-	-	6	-	14	-	72	104	-	1	2
Vt	2	-	-	-	-	-	17	-	4	-	3	3	-	1	-
Mass	32	1	25	-	12	118	36	-	10	2	34	45	-	4	6
R.I.	7	-	2	-	-	-	19	1	10	-	6	16	-	2	-
Conn	14	-	1	5 §	7	7	40	1	22	-	24	7	-	1	4
MID ATLANTIC	129	-	1,686	-	33	217	326	3	180	-	173	190	-	34	221
Upstate N.Y.	44	-	77	-	23	85	110	-	59	-	109	98	-	26	17
N.Y. City	29	-	682	-	4	70	68	-	29	-	10	23	-	5	179
N.J.	32	-	905	-	4	28	30	2	46	-	17	11	-	3	11
Pa.	24	-	22	-	2	34	118	1	46	-	37	58	-	-	14
E.N. CENTRAL	58	2	1,053	-	28	535	278	123	2,866	1	326	678	-	45	33
Ohio	19	-	-	-	10	60	112	-	116	-	146	89	-	1	-
Ind.	2	2	27	-	11	57	28	2	36	-	26	188	-	-	1
Ill.	15	-	689	-	4	299	70	109	2,203	-	35	66	-	34	16
Mich.	18	-	59	-	-	60	59	12	287	1	35	44	-	8	15
Wis.	4	-	278	-	3	59	9	-	224	-	84	291	-	2	1
W.N. CENTRAL	29	-	322	-	17	11	99	6	113	250	1,146	210	-	13	19
Minn.	8	-	45	-	4	6	20	-	1	2	51	104	-	1	2
Iowa	1	-	133	-	1	-	11	2	34	-	19	28	-	1	1
Mo.	11	-	25	-	6	2	34	4	21	1	19	29	-	1	7
N. Dak.	-	-	25	-	1	2	1	-	3	-	5	9	-	1	2
S. Dak.	2	-	-	-	-	-	5	-	1	-	14	3	-	-	-
Nebr.	4	-	-	-	-	-	11	-	-	-	7	9	-	-	-
Kans.	3	-	94	-	5	1	17	-	53	247	1,031	28	-	9	7
S. ATLANTIC	110	-	663	-	56	324	362	5	206	6	707	479	1	14	51
Del.	1	-	1	-	-	-	4	-	-	-	227	2	-	-	1
Md.	14	-	26	-	9	110	45	1	19	2	163	271	-	-	6
D.C.	2	-	-	-	2	29	5	-	-	-	-	-	-	-	-
Va.	28	-	36	-	24	28	63	-	38	-	36	17	-	-	2
W. Va.	4	-	2	-	-	33	3	3	48	-	23	4	-	-	9
N.C.	5	-	3	-	1	9	59	1	21	2	68	30	-	-	1
S.C.	6	-	274	-	-	3	33	-	12	-	18	2	-	-	3
Ga.	12	-	79	-	14	8	53	-	28	1	129	91	-	-	-
Fla.	38	-	242	-	6	104	97	-	40	1	43	62	1	14	29
E.S. CENTRAL	19	-	58	-	9	7	109	1	43	-	47	50	-	4	3
Ky.	5	-	-	-	6	5	24	-	6	-	5	8	-	4	3
Tenn.	1	-	55	-	1	1	37	1	32	-	16	20	-	-	-
Ala.	9	-	1	-	1	-	35	-	4	-	25	18	-	-	-
Miss.	4	-	2	-	1	1	13	-	1	-	1	4	-	-	-
W.S. CENTRAL	94	37	642	-	38	434	185	32	216	11	231	484	-	63	37
Ark.	1	-	276	-	2	-	27	26	33	1	18	14	-	-	1
La.	17	-	4	-	-	42	25	-	3	-	13	15	-	-	-
Okla.	10	-	37	-	2	1	28	N	N	10	117	159	-	-	1
Tex.	66	37	325	-	34	391	105	6	180	-	83	296	-	63	35
MOUNTAIN	31	-	302	-	29	539	98	2	235	3	240	200	-	23	6
Mont.	-	-	-	-	8	137	10	-	5	-	14	9	-	2	-
Idaho	1	-	1	-	-	137	4	-	8	-	41	15	-	-	2
Wyo.	-	-	-	-	-	5	2	-	-	-	4	-	-	1	-
Colo.	8	-	2	-	8	13	16	1	14	2	65	75	-	1	-
N. Mex.	5	-	33	-	7	6	9	N	N	-	20	11	-	-	2
Ariz.	11	-	252	-	6	241	21	-	186	-	56	38	-	2	1
Utah	3	-	12	-	-	-	10	1	14	1	36	52	-	14	-
Nev.	3	-	2	-	-	-	26	-	8	-	4	-	-	3	1
PACIFIC	416	11	584	4	62	390	424	6	307	18	438	420	3	238	196
Wash.	26	3	139	-	28	115	58	4	14	-	139	74	1	17	14
Oreg.	15	-	7	-	4	5	32	N	N	-	12	44	1	4	1
Calif.	374	8	411	4 †	29	246	312	2	267	18	271	255	1	212	132
Alaska	-	-	-	-	-	-	12	-	6	-	2	30	-	-	1
Hawaii	1	-	27	-	1	24	10	-	20	-	14	17	-	5	48
Guam	1	-	4	-	1	11	-	-	4	-	-	-	-	4	2
P.R.	4	-	36	-	-	63	3	-	32	2	19	11	1	62	27
V.I.	-	-	-	-	-	10	-	1	16	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	-	-	1	-	11	-	-	-	-	2	-
Amer. Samoa	-	-	2	-	-	-	-	-	5	-	-	-	-	1	-

*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 October 25, 1986 and October 26, 1985 (43rd Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum 1986	Cum 1985	1986	Cum 1986	Cum 1985	Cum 1986	Cum 1986	Cum 1986	Cum 1986
UNITED STATES	21,980	22,289	5	18,085	17,536	126	257	707+21	4,549
NEW ENGLAND	399	487	-	574	612	1	15	13	8
Maine	17	13	-	34	40	-	-	-	-
N H	10	36	-	23	20	-	-	2	1
Vt	8	6	-	15	7	-	-	-	2
Mass	210	243	-	317	366	1	12	4	-
R I	21	14	-	41	47	-	-	3	3
Conn	133	175	-	144	132	-	3	4	2
MID ATLANTIC	3,100	3,015	-	3,582	3,152	1	22	34+3	578
Upstate N Y	155	228	-	505	546	-	4	19	75
N Y City	1,755	1,842	-	1,884	1,527	-	9	5	-
N J	550	579	-	602	425	1	8	2	17
Pa	640	366	-	591	654	-	1	8 3	486
E N CENTRAL	799	849	-	2,170	2,143	-	21	54	125
Ohio	103	128	-	383	365	-	7	48	14
Ind	95	71	-	237	266	-	2	-	17
Ill	363	400	-	910	947	-	3	2	36
Mich	143	194	-	540	444	-	6	4	24
Wis	95	56	-	100	121	-	3	-	34
W N CENTRAL	175	194	2	528	492	35	9	47+1	689
Minn	29	39	-	124	106	-	2	1	98
Iowa	6	18	-	46	49	1	-	1	160
Mo	93	103	1	261	235	27	6	23	67
N Dak	5	2	-	6	10	-	-	1	141
S Dak	9	6	-	23	27	2	-	6	141
Nebr	11	7	-	12	15	1	-	6 1	29
Kans	22	19	1	56	50	4	1	9	53
S ATLANTIC	6,641	6,448	1	3,615	3,579	9	43	321+7	1,141
Del	52	34	-	36	39	-	1	1	1
Md	375	401	-	273	322	2	15	28	516
D C	250	282	-	128	133	1	4	-	31
Va	296	250	1	295	338	2	9	51 3	167
W Va	19	21	-	104	93	-	3	10 1	40
N C	430	583	-	503	455	1	4	121 2	9
S C	581	678	-	463	441	-	-	70	60
Ga	1,246	1,147	-	613	596	3	-	38 1	170
Fla	3,392	3,052	-	1,200	1,162	-	7	2	147
E S CENTRAL	1,436	1,747	-	1,593	1,526	10	3	102+6	303
Ky	60	57	-	360	367	3	-	21 1	87
Tenn	504	528	-	459	447	5	1	42 2	109
Ala	445	560	-	506	458	1	1	24 2	105
Miss	427	602	-	268	254	1	1	15 1	2
W S CENTRAL	4,399	5,151	1	2,272	2,255	57	22	125+3	630
Ark	214	284	-	312	266	40	-	10 1	143
La	761	903	-	378	321	1	1	-	18
Okla	118	156	-	210	215	11	2	98 2	56
Tex	3,306	3,808	1	1,372	1,453	5	19	17	413
MOUNTAIN	478	582	1	434	449	10	15	10+1	601
Mont	6	6	-	24	46	1	1	4	194
Idaho	13	5	-	20	22	-	-	2 1	9
Wyo	2	7	-	-	5	-	-	1	250
Colo	113	148	-	38	56	3	1	3	29
N Mex	54	112	-	83	73	1	1	-	6
Ariz	204	259	1	207	207	-	8	-	95
Utah	16	8	-	29	12	4	3	-	7
Nev	70	37	-	33	28	1	1	-	11
PACIFIC	4,553	3,816	-	3,317	3,328	3	107	1	474
Wash	120	97	-	176	194	1	3	-	5
Oreg	99	86	-	109	108	-	-	-	1
Calif	4,302	3,576	-	2,837	2,790	1	99	1	460
Alaska	1	4	-	46	81	1	1	-	8
Hawaii	31	53	-	149	155	-	4	-	-
Guam	1	2	-	34	36	-	1	-	-
P R	736	705	-	288	295	-	5	-	41
V I	1	3	-	1	1	-	-	-	-
Pac. Trust Terr.	215	128	-	62	75	-	46	-	-
Amer. Samoa	-	-	-	5	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending October 25, 1986 (43rd Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	632	452	113	33	15	19	54
Boston, Mass.	146	90	27	12	4	13	21
Bridgeport, Conn.	48	39	8	-	1	-	5
Cambridge, Mass.	27	21	4	1	1	-	2
Fall River, Mass.	30	24	5	-	-	1	-
Hartford, Conn.	42	27	8	4	3	-	2
Lowell, Mass.	21	15	3	3	-	-	-
Lynn, Mass.	23	16	4	2	-	1	-
New Bedford, Mass.	27	22	3	2	-	-	1
New Haven, Conn.	42	29	9	-	4	-	3
Providence, R.I.	70	53	13	2	1	1	7
Somerville, Mass.	10	9	1	-	-	-	2
Springfield, Mass.	49	38	6	2	-	3	4
Waterbury, Conn.	27	14	10	2	1	-	4
Worcester, Mass.	70	55	12	3	-	-	3
MID ATLANTIC	2,754	1,750	613	262	60	68	142
Albany, N.Y.	44	28	10	1	3	2	-
Allentown, Pa.	21	13	7	1	-	-	2
Buffalo, N.Y.	114	76	26	4	3	5	7
Camden, N.J.	47	23	15	4	2	3	1
Elizabeth, N.J.	28	19	6	3	-	-	-
Erie, Pa.†	40	31	8	-	-	1	5
Jersey City, N.J.	33	16	5	6	3	3	2
N.Y. City, N.Y.	1,443	902	306	179	34	22	69
Newark, N.J.	76	32	28	12	2	1	-
Paterson, N.J.	33	17	11	4	-	1	1
Philadelphia, Pa.	397	255	92	24	8	18	25
Pittsburgh, Pa.†	74	47	22	1	1	3	-
Reading, Pa.	39	27	10	-	-	2	3
Rochester, N.Y.	131	93	23	10	-	5	17
Schenectady, N.Y.	33	26	5	1	1	-	1
Scranton, Pa.†	29	22	6	1	-	-	1
Syracuse, N.Y.	86	59	17	6	2	2	5
Trenton, N.J.	38	25	9	4	-	-	-
Utica, N.Y.	17	15	2	-	-	-	2
Yonkers, N.Y.	31	24	5	1	1	-	1
E.N. CENTRAL	2,428	1,588	531	159	69	81	82
Akron, Ohio	73	53	13	5	2	-	-
Canton, Ohio	37	27	8	1	1	-	6
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	154	111	30	2	4	7	15
Cleveland, Ohio	199	126	52	9	6	6	9
Columbus, Ohio	166	100	47	10	2	7	-
Dayton, Ohio	113	72	29	6	3	3	1
Detroit, Mich.	263	167	53	24	11	8	10
Evansville, Ind.	41	26	13	1	-	1	-
Fort Wayne, Ind.	46	39	6	-	1	-	3
Gary, Ind.	18	12	4	2	-	-	-
Grand Rapids, Mich.	91	64	13	5	5	4	8
Indianapolis, Ind.	171	111	38	5	8	9	-
Madison, Wis.	41	25	7	6	3	-	2
Milwaukee, Wis.	134	68	28	27	8	3	-
Peoria, Ill.	39	24	9	-	-	6	2
Rockford, Ill.	43	34	5	1	-	3	2
South Bend, Ind.	54	45	7	2	-	-	2
Toledo, Ohio	121	80	28	8	3	2	6
Youngstown, Ohio	60	42	16	-	2	-	-
W.N. CENTRAL	784	546	138	53	19	27	36
Des Moines, Iowa	72	55	12	3	1	1	1
Duluth, Minn.	17	10	4	-	-	3	3
Kansas City, Kans.	37	26	6	1	3	1	-
Kansas City, Mo.	105	66	22	12	3	2	4
Lincoln, Nebr.	42	35	4	3	-	-	6
Minneapolis, Minn.	167	111	32	17	2	4	5
Omaha, Nebr.	96	72	12	5	4	3	5
St. Louis, Mo.	127	92	19	7	1	8	5
St. Paul, Minn.	53	37	10	4	1	1	2
Wichita, Kans.	88	42	17	1	4	4	5
S. ATLANTIC	1,160	757	230	109	30	34	40
Atlanta, Ga.	149	88	26	29	1	5	1
Baltimore, Md.	264	171	57	24	4	8	12
Charlotte, N.C.	67	42	14	5	2	4	3
Jacksonville, Fla.	92	59	21	6	4	2	7
Miami, Fla.	116	72	25	12	4	3	1
Norfolk, Va.	48	27	13	2	4	2	3
Richmond, Va.	61	48	7	1	2	3	2
Savannah, Ga.	36	24	8	4	-	-	-
St. Petersburg, Fla.	104	89	12	2	-	1	4
Tampa, Fla.	69	48	11	6	2	2	3
Washington, D.C.	128	71	32	15	6	4	4
Wilmington, Del.	26	18	4	3	1	-	-
E.S. CENTRAL	792	484	186	67	26	29	23
Birmingham, Ala.	112	58	27	13	6	8	-
Chattanooga, Tenn.	60	43	13	4	-	-	3
Knoxville, Tenn.	79	46	18	7	4	4	2
Louisville, Ky.	125	78	35	6	3	3	8
Memphis, Tenn.	163	107	37	11	4	4	3
Mobile, Ala.	80	44	18	15	1	2	2
Montgomery, Ala.	49	31	12	2	1	3	-
Nashville, Tenn.	124	77	26	9	7	5	5
W.S. CENTRAL	1,357	812	318	124	50	53	53
Austin, Tex.	64	29	22	8	3	2	1
Baton Rouge, La.	55	33	13	4	3	2	2
Corpus Christi, Tex.	53	31	15	3	1	3	-
Dallas, Tex.	232	137	54	17	12	12	5
El Paso, Tex.	86	53	21	7	2	3	8
Fort Worth, Tex.	85	54	10	8	4	9	7
Houston, Tex.	291	166	70	33	10	12	5
Little Rock, Ark.	51	27	17	4	1	2	3
New Orleans, La.	125	80	22	16	3	4	-
San Antonio, Tex.	168	112	37	13	5	1	14
Shreveport, La.	71	44	17	4	3	3	3
Tulsa, Okla.	76	46	20	7	3	-	5
MOUNTAIN	636	390	139	57	25	25	33
Albuquerque, N.Mex.	82	52	16	8	4	2	6
Colo. Springs, Colo.	47	30	11	1	5	-	9
Denver, Colo.	115	59	29	14	6	7	3
Las Vegas, Nev.	60	38	18	3	1	-	1
Ogden, Utah	15	14	1	-	-	-	-
Phoenix, Ariz.	144	84	32	15	5	8	5
Pueblo, Colo.	19	13	5	1	-	-	1
Salt Lake City, Utah	47	28	8	5	-	6	2
Tucson, Ariz.	107	72	19	10	4	2	6
PACIFIC	2,102	1,371	399	189	68	63	145
Berkeley, Calif.	24	16	5	2	-	1	3
Fresno, Calif.	77	46	16	10	2	2	7
Glendale, Calif.	38	31	3	2	1	1	4
Honolulu, Hawaii	75	55	9	6	-	5	10
Long Beach, Calif.	81	48	22	6	1	4	6
Los Angeles, Calif.	698	443	139	65	28	14	28
Oakland, Calif.	85	51	20	7	5	2	4
Pasadena, Calif.	32	22	7	-	1	2	4
Portland, Oreg.	149	109	19	9	6	6	8
Sacramento, Calif.	137	97	21	14	2	3	19
San Diego, Calif.	155	91	32	18	8	4	16
San Francisco, Calif.	139	88	26	20	2	3	4
San Jose, Calif.	175	115	37	13	4	6	14
Seattle, Wash.	148	96	30	10	5	7	9
Spokane, Wash.	52	36	8	3	3	2	8
Tacoma, Wash.	37	27	5	4	-	1	1
TOTAL	12,645††	8,150	2,667	1,053	362	399	608

* 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 4 weeks.

Epidemiologic Notes and Reports

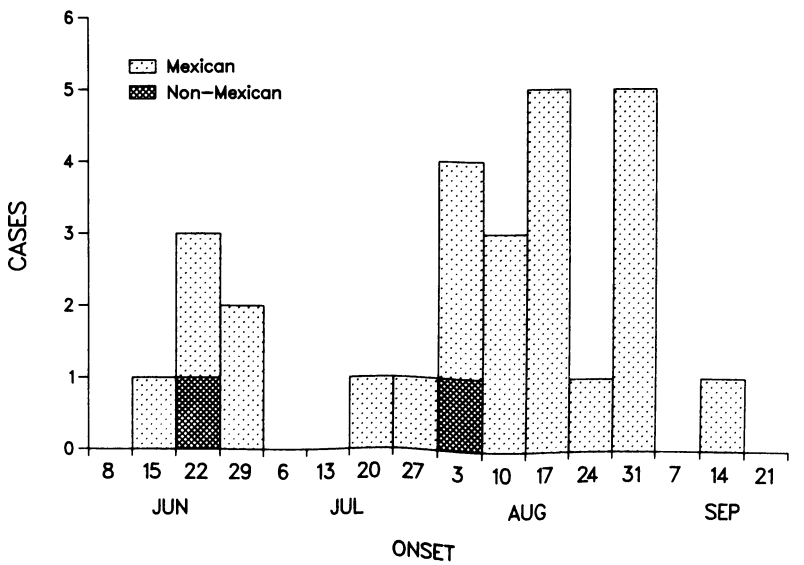
Plasmodium Vivax Malaria — San Diego County, California, 1986

Two clusters of malaria involving 27 patients were identified in San Diego, California, in the period August 8-September 30, 1986. The initial patient identified (Patient A) in the outbreak was a 58-year-old resident of Carlsbad, a coastal community of 35,000 in San Diego County, who was seen by his local physician because of high fever and diarrhea. He was initially diagnosed as having a viral illness, but when his symptoms worsened on August 11, he was admitted to a local hospital. Three days later a blood smear was positive for *Plasmodium vivax* malaria. Treatment with chloroquine and primaquine led to his recovering without complications. He had no history of intravenous drug use, blood transfusion, or travel to areas with endemic malaria. The patient lives in a residential area across the street from a marsh that empties into a salt-water lagoon, and in July he took frequent evening walks through the marsh area.

In response to this report of *P. vivax* malaria in the area, on August 16 an effort was begun to identify all cases of malaria reported in San Diego County since January 1, 1986. The San Diego County Health Department records were reviewed, and local hospitals and physicians were contacted to detect unreported cases. As a result, an additional 26 cases of *P. vivax* (smear-positive) malaria were identified as having occurred in the Carlsbad area in the period June 18-September 20. The epidemic curve shows a bimodal distribution with a 24-day interval between the two clusters (Figure 2).

The first cluster of cases involved six patients who became ill between June 18 and July 2 and were identified as five Mexican migrant agricultural workers and one San Diego County

FIGURE 2. Cases of Plasmodium vivax malaria, by week of symptom onset — San Diego County, California, June 8—September 21, 1986



Malaria – Continued

resident who lived 20 miles from Carlsbad. This 30-year-old male (Patient B) had gone swimming on May 31 and June 7 in a lake 3 miles southeast of the lagoon area frequented by Patient A during his evening walks. In September 1985, Patient B had traveled to an area north of Puerto Vallarta, Mexico, where he slept on the beach. He denied any previous malaria infection, intravenous drug use, or blood transfusion.

The second cluster of cases involved 21 patients who became ill between July 26 and September 20 and were identified as 20 Mexican migrant workers and the local Carlsbad resident (Patient A) discussed above. Twenty of the 25 infections involving Mexican migrant workers from both time periods were reported by the same local hospital. The other five were diagnosed during an active case-detection survey involving interviews with 319 migrant workers on the three agricultural farms in the lagoon area.

Eighteen of the migrant-worker patients were interviewed. None of them had a history of intravenous drug use or blood transfusion, and only one had a history of malaria infection. All were males 17-30 years of age. They were employed in a variety of work situations, came from five different states in Mexico, and had arrived in the United States 2 weeks-20 months before becoming ill. Eleven of these patients had been in the United States at least 2 months.

On August 14, a baited light trap placed in the marsh area was found to contain 115 adult female *Anopheles freeborni* mosquitoes, a competent vector of malaria. On August 18, after the San Diego County Vector Surveillance Unit had applied adulticide/larvicide to the area, a baited light trap placed in the area contained 16 adult female *An. freeborni*. No *An. freeborni* were found in the trap on August 22, and subsequent trapping efforts led to counts of 0-10 *An. freeborni* per light trap in the marsh area.

Reported by J Turley, Tri-City Hospital, Oceanside, E Orellana, S Hunt, M Mizrahi, MS, M Ginsberg, MD, M Thompson, DrPH, G Reaser, MD, D Ramras, MD, San Diego County Dept of Health Svcs, T Smith, MS, Vector Surveillance and Control Br, R R Roberto, MD, Infectious Disease Br, California Dept of Health Svcs; Div of Field Svcs, Epidemiology Program Office, Malaria Br, Div of Parasitic Diseases, Center for Infectious Diseases, CDC.

Editorial Note: This two-cluster outbreak of *P. vivax* malaria involving 27 patients and occurring within a 14-week period represents an unusually high number of reported cases of malaria in San Diego County in such a short time. That is, in all of calendar year 1985, only 20 cases of imported malaria among civilians were reported to the San Diego County Health Department. From January through August 1986, only two cases in addition to the outbreak described here were reported among civilians in San Diego County. One of these cases represented importation from India, and the other, from Papua New Guinea.

Some or all of the 27 cases of *P. vivax* malaria in these two clusters were acquired by local transmission in San Diego County. For example, the *P. vivax* infection of Patient A, who had no other identified risk factors, indicates local transmission. Furthermore, the occurrence of two clusters in time and space suggests that some of the cases among Mexican migrant workers represent *P. vivax* infection acquired in the marsh area rather than imported from Mexico. Data from the vector surveillance indicate that adult female *An. freeborni* were present in large numbers in the lagoon area during the period that transmission occurred. The 24-day interval between the two clusters is consistent with the time required for development of the parasite in the infected mosquito (range 11-20 days) and the incubation period of *P. vivax* in humans (12-17 days) (*1*). Furthermore, the case investigations indicated that the common factor shared by the Mexican migrant patients was that they all slept in the open on a hillside bordering the marsh.

Malaria — Continued

This represents the largest outbreak of introduced malaria* in the United States since 1952 (*2*). Only 14 isolated episodes of introduced malaria have been reported in the United States since 1950, despite periodic increases in the number of imported malaria cases in the same period. Seven of these 14 episodes occurred in California. In the period 1966-1971, there were 16,872 reported cases of malaria imported by American military personnel returning from Southeast Asia. In the same period, only three episodes of introduced malaria could be related to Vietnam veterans (*3*). In 1979-1981, there were 1,571 cases of malaria reported among refugees from areas of Southeast Asia with endemic malaria. No cases of introduced malaria have been attributed to this influx of immigrants (*4*). However, the outbreak of introduced malaria described in this report may be related to the increased importation of malaria by migrant workers from Mexico who do not have authorization papers and may therefore be reluctant to seek medical care. The number of cases of malaria imported from Mexico into California rose from 20 in 1983 to 75 in 1985. In Mexico the number of reported malaria cases has doubled in the past 4 reporting years—from 42,104 in 1981 to 85,501 in 1984 (*5*).

Introduced malaria is quite rare in the United States despite the presence of competent anopheline vectors in California (*An. freeborni*), the states that border Mexico, and the entire Southeast (*An. quadrimaculatus*) during the warmer months. Transmission of malaria requires that a susceptible female mosquito feed on an infected person. The mosquito must survive long enough to allow the parasite to mature and then must find an available host to infect. In the United States, the likelihood that this sequence of events will occur is low. In Carlsbad, the influx of carriers of malaria parasites into an area with a susceptible population and large numbers of competent mosquito vectors created the rare juxtaposition of events required for a malaria outbreak.

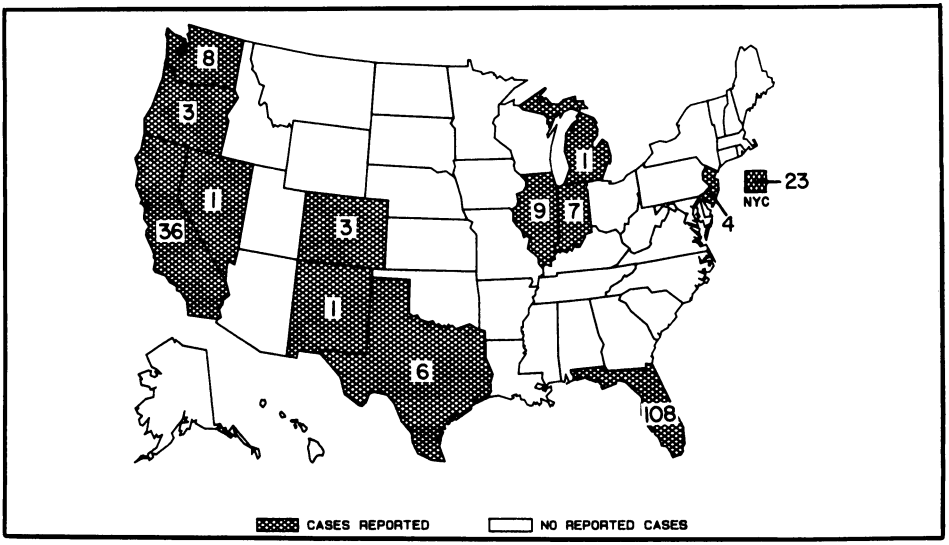
If Patient A's malaria infection had not been diagnosed and reported, some of the locally acquired *P. vivax* infections among the Mexican migrants might not have been recognized. Medical personnel should be aware that introduced malaria may affect a susceptible population of migrant workers, as well as the resident population. A complete history of recent travel, malaria infection, time of arrival in the United States, intravenous drug use, and blood transfusion should be obtained. Regardless of the characteristics of the population of patients, a cluster of malaria cases should trigger an investigation to determine whether local transmission has occurred. Prompt reporting of malaria cases will assist in assuring that introduced malaria does not grow to be a substantial public health threat in the United States.

References

1. Bruce-Chwatt LJ. Essential malariology. New York: John Wiley & Sons, Inc., 1985:59.
2. Brunetti R, Fritz RF, Hollister AC Jr. An outbreak of malaria in California, 1952-1953. Am J Trop Med Hyg 1954;3:779-88.
3. CDC. Malaria surveillance annual summary. Atlanta, Georgia: US Public Health Service, 1971.
4. CDC. Malaria surveillance annual summary. Atlanta, Georgia: US Public Health Service, 1979, 1980, 1981.
5. Pan American Health Organization. Status of malaria program in the Americas. Epidemiological Bulletin 1986;7:2.

*Defined as malaria acquired by mosquito transmission in an area in which malaria does not occur regularly.

FIGURE I. Reported measles cases — United States, weeks 39-42, 1986



The *Morbidity and Mortaility 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: ATTN: Editor, *Morbidity and Mortality Weekly Report,* Centers for Disease Control, Atlanta, Georgia 30333.

☆U.S. Government Printing Office: 1987-730-145/40031 Region IV

HHS Publication No. (CDC) 87-8017