CENTERS FOR DISEASE CONTROL

May 30, 1986 / Vol. 35 / No. 21

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Arboviral Infections of the Central Nervous System — United States, 1985

In 1985, arboviral infections of the central nervous system (CNS) were reported among 90 persons in the United States (Table 1, Figures 1 and 2). A St. Louis encephalitis (SLE) outbreak occurred in Mesa County, Colorado, leading to 17 cases, including one fatality. Four sporadic SLE cases were reported from Texas (one) and California (three). One of the California cases occurred in a Los Angeles resident, where an SLE outbreak occurred in 1984. One case of western equine encephalitis was reported from Texas. Endemic LaCrosse virus transmission in the midwest led to 68 cases of CNS infection.

ST. LOUIS ENCEPHALITIS

The SLE outbreak that occurred in Mesa County in western Colorado (Figure 3) included principally residents of Grand Junction, the county's largest town. The age-adjusted attack rate for Grand Junction was 33.5/100,000, compared with 12.2/100,000 for the remainder of the county. Active surveillance failed to disclose cases in neighboring counties. Attack rates were highest among the elderly, but there was no clear increase in risk with advancing age. The age-adjusted attack rate for females was nearly double that for males (26.5/100,000 and 13.7/100,000, respectively; the standard error for the adjusted attack rate for females was 7.7/100,000). One patient, a 73-year-old woman, died. In an ecologic investigation undertaken in late September, fewer than 0.1 *Culex tarsalis* mosquitoes were caught per trap night. However, cool weather and declining daylight hours mitigated against successful collections. No virus was isolated from 646 pooled arthropods. A serosurvey of Grand Junction residents disclosed inapparent infections among 4% of the city residents, i.e., the outbreak may have led to approximately 1,100 infections. Infection rates for males and females were similar; therefore, increased risk for clinical disease among females could not be attributed to greater exposure.

Elsewhere in the west, sporadic SLE cases were reported from Dawson County, Texas, and from California (three cases). California cases occurred in 17- and 31-year-old males from Riverside County (the latter may have been infected in the Mohave Valley, Arizona) and a 61-year-old Los Angeles woman. Evidence of enzootic SLE transmission was found near the residence of the Los Angeles patient; an SLE virus isolate was recovered from *Cx. peus* collected in Encino, and a sentinel chicken located near the Sepulveda Reservoir seroconverted to SLE virus.

No human cases were reported in the eastern and central United States for the second consecutive year, and avian surveillance disclosed negligible enzootic transmission except in Florida.

OTHER ARBOVIRAL INFECTIONS OF THE CNS

No human eastern equine encephalitis cases were reported. Equine cases occurred principally in coastal southeastern states (Figure 2). Seroconversions in sentinel chickens were observed as far west as Houston, Texas.

Arboviral Infections – Continued

Western equine encephalitis was reported in a 27-year-old man from Ellis County, Texas. Equine cases were reported from scattered western states and from Illinois and Indiana, at the eastern-most range of the virus.

LaCrosse virus infections were reported principally from the upper midwest where the disease is endemic. Counties in an endemic focus in southwestern West Virginia reported cases for the third consecutive year.

Reported by E Hughes, Mobile County Health Dept, L Lauerman, DVM, Alabama State Dept of Agriculture and Industries, WE Birch, DVM, State Epidemiologist, Alabama State Dept of Public Health; J Doll, PhD, M Wright, R Cheshier, PhD, W Stromberg, PhD, GG Caldwell, MD, State Epidemiologist, Arizona Dept of Health Svcs; TC McChesney, DVM, State Epidemiologist, Arkansas Div of Health; Microbiology Reference Laboratory, Long Beach, Long Beach City Health Dept, Arbovirus Research Unit, School of Public Health, University of California, Berkeley, Epidemiology, Laboratory, and Vector Control Svcs, County of Los Angeles Dept of Health Svcs, Orange County Health Care Agency, County of Riverside, R Emmons, MD, Viral and Rickettsial Disease Laboratory Section, R Murray, PhD, R Roberto, MD, Infectious Disease Section, J Chin, MD, State Epidemiologist, California Dept of Health Svcs; J Emerson, DVM, SW Ferguson, PhD, State Epidemiologist, Colorado Dept of Health; A Main, PhD, R Shope, MD, Yale Arbovirus Research Unit, New Haven, D Mayo, MA Markowski, JL Hadler, MD, State Epidemiologist, Connecticut

TABLE 1. Reported arboviral infections of the CNS — United States, 1955-1985

	Cases by etiology*					
Year	SLE	WEE	EEE	California serogroup viruses†	Other	Total
1955	107	37	15		0	159
1956	563	47	15		0	625
1957	147	35	5		0	187
1958	94	141	2		0	237
1959	118	14	36		0	168
1960	21	21	3		0	45
1961	42	27	1		0	70
1962	253	17	0		0	270
1963	19	56	0	1	0	76
1964	470	64	5	42	0	581
1965	58	172	8	59	0	297
1966	323	47	4	64	0	438
1967	11	18	1	53	0	83
1968	35	17	12	66	1 VEE	131
1969	16	21	3	67	1 VEE	108
1970	15	4	2	89	1 POW§	111
1971	57	11	4	58	20§	150
1972	13	8	0	46	5¶	72
1973	5	4	7	75	0	91
1974	74	2	4	30	1 POW	111
1975	1,815	133	3	160	3 POW	2,114
1976	379	1	0	47	0	427
1977	132	41	1	65	1 POW	240
1978	26	3	5	109	1 POW	144
1979	32	3	3	139	0	177
1980	125	0	8	49	0	182
1981	15	19	0	91	0	125
1982	34	9	12	130	0	185
1983	20	7	14	64	0	105
1984	33	2	5	89	0	129
1985	21	1	0	68	0	90
Total	**5,073**	**982**	**178**	**1,661**	**34**	**7,928**

*SLE = St. Louis encephalitis; WEE = western equine encephalitis; EEE = eastern equine encephalitis; POW = Powassan encephalitis; VEE = Venezuelan equine encephalitis. Source: Division of Vector-Borne Viral Diseases, Center for Infectious Diseases, CDC.

†No data available before 1963.

§VEE, 19 cases; POW, one case.

¶VEE, two imported cases; POW, three cases.

Arboviral Infections — Continued

FIGURE 1. Arboviral infections of the central nervous system, by state of residence, week of onset, and etiology — United States, 1985

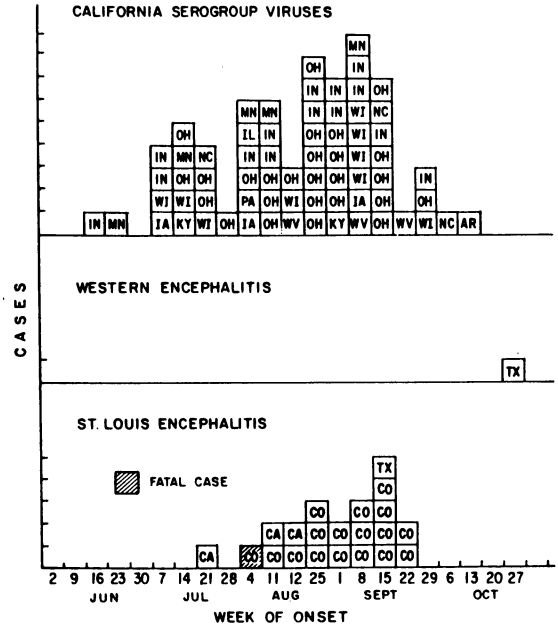
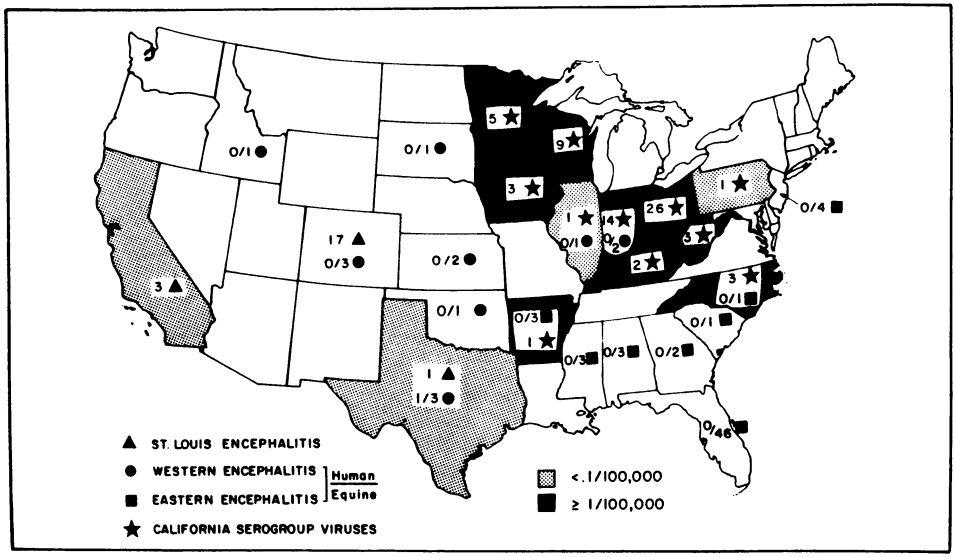


FIGURE 2. Arboviral infections of the central nervous system, by state of residence and etiology — United States, 1985



Arboviral Infections – Continued

State Dept of Health Svcs; M Verma, PhD, J Jean, PhD, PR Silverman, DrPH, State Epidemiologist, Delaware Dept of Health and Social Svcs; MP Hunt, J Gamble, East Volusia County, Mosquito Abatement District, Daytona Beach, HL Rubin, DVM, State of Florida Dept of Agriculture and Consumer Svcs, L McCaig, S Lieb, MPH, W Bigler, PhD, FM Wellings, PhD, EC Prather, MD, State Epidemiologist, Florida Dept of Health and Rehabilitative Svcs; J Cole, DVM, University of Georgia, Tifton, RK Sykes, DVM, State Epidemiologist, Georgia Dept of Human Resources; W Turnock, MD, Chicago Dept of Health, HJ Dominick, C Langkop, BJ Francis, MD, State Epidemiologist, Illinois Dept of Public Health; MJ Sinsko, PhD, CL Barrett, MD, State Epidemiologist, Indiana State Board of Health; NS Swack, PhD, LA Wintermeyer, MD, State Epidemiologist, Iowa Dept of Health, J Pearson, DVM, US Dept of Agriculture, Ames, Iowa; R French, MD, Acting State Epidemiologist, Kansas State Dept of Health and Environment; JC McCammon, MD, Louisville and Jefferson County Dept of Health, MW Hinds, MD, State Epidemiologist, Kentucky Dept of Health Svcs; HB Bradford, Jr, PhD, L MacFarland, DrPH, Acting State Epidemiologist, Louisiana Dept of Health and Human Resources; T Scott, PhD, University of Maryland, College Park, G Stern, DVM, Maryland Dept of Agriculture, C Lazar, MD, M Josephs, PhD, E Israel, MD, State Epidemiologist, Maryland State Dept of Health and Mental Hygiene; V Berardi, H Maxfield, GF Grady, MD, State Epidemiologist, The State Laboratory Institute, Massachusetts Dept of Public Health; H McGee, MPH, KR Wilcox, Jr, MD, State Epidemiologist, Michigan Dept of Public Health; TF Smith, PhD, Mayo Clinic, Rochester, L Boyd, PhD, J Korlath, MPH, MT Osterholm, PhD, State Epidemiologist, Minnesota Dept of Health; DL Sykes, QA Long, Gulf Coast Mosquito Control Commission, Gulfport, FE Thompson, MD, State Epidemiologist, Mississippi State Dept of Health; J Goins, PhD, HD Donnell, Jr, MD, State Epidemiologist, Missouri Div of

(Continued on page 349)

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

Disease	21st Week Ending			Cumulative, 21st Week Ending		
	May 24, 1986	May 25, 1985	Median 1981-1985	May 24, 1986	May 25, 1985	Median 1981-1985
Acquired Immunodeficiency Syndrome (AIDS)	292	152	N	5,053	2,807	N
Aseptic meningitis	60	98	89	1,707	1,493	1,588
Encephalitis: Primary (arthropod-borne & unspec.)	8	13	16	297	360	360
Post-infectious	3	1	4	37	54	41
Gonorrhea: Civilian	11,154	15,146	16,081	323,287	317,556	357,318
Military	309	384	384	6,307	7,828	9,812
Hepatitis: Type A	261	456	439	8,634	8,587	9,030
Type B	363	412	420	9,985	9,938	9,276
Non A, Non B	45	83	N	1,346	1,676	N
Unspecified	60	121	121	1,963	2,189	2,933
Legionellosis	8	19	N	210	248	N
Leprosy	4	6	6	109	156	91
Malaria	7	18	18	284	296	298
Measles: Total*	169	74	82	2,733	1,262	1,262
Indigenous	164	68	N	2,617	1,019	N
Imported	5	6	N	116	243	N
Meningococcal infections: Total	33	40	54	1,262	1,225	1,424
Civilian	33	39	54	1,260	1,220	1,421
Military	-	1	1	2	5	6
Mumps	186	68	68	1,563	1,642	1,774
Pertussis	76	21	23	998	605	605
Rubella (German measles)	18	13	30	220	202	489
Syphilis (Primary & Secondary): Civilian	275	479	578	10,065	10,002	12,133
Military	1	6	9	78	76	150
Toxic Shock syndrome	4	7	N	142	158	N
Tuberculosis	364	449	477	8,060	8,045	8,904
Tularemia	1	8	7	24	45	49
Typhoid fever	4	1	3	98	109	137
Typhus fever, tick-borne (RMSF)	23	8	13	89	89	100
Rabies, animal	70	111	129	2,169	2,019	2,444

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1986		Cum 1986
Anthrax	-	Leptospirosis	17
Botulism: Foodborne	4	Plague	-
Infant	21	Poliomyelitis, Paralytic	-
Other	-	Psittacosis (Mass. 1, Wash. 2)	26
Brucellosis (Ala. 1)	23	Rabies, human	-
Cholera	-	Tetanus	17
Congenital rubella syndrome	2	Trichinosis (Fla. 1)	9
Congenital syphilis, ages < 1 year	11	Typhus fever, flea-borne (endemic, murine)	10
Diphtheria	-		

*Three of the 169 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 May 24, 1986 and May 25, 1985 (21st 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	5,053	60	297	37	323,287	317,556	261	363	45	60	8	109
NEW ENGLAND	215	1	9	2	7,451	9,608	14	36	1	3	1	3
Maine	11	-	-	-	383	368	-	4	-	-	-	-
N.H	6	-	2	-	196	202	-	-	-	-	-	-
Vt.	2	-	2	1	106	104	-	-	-	-	-	-
Mass.	112	-	2	-	3,246	3,583	9	17	-	3	1	3
R.I.	13	-	-	-	734	716	1	3	-	-	-	-
Conn.	71	1	3	1	2,786	4,635	4	12	1	-	-	-
MID. ATLANTIC	1,954	12	47	1	55,442	45,432	17	21	7	2	-	9
Upstate N.Y.	170	1	18	-	6,412	6,485	9	12	4	1	-	1
N.Y. City	1,339	2	11	-	31,876	21,062	-	1	2	-	-	7
N.J.	304	9	5	-	7,314	8,225	8	8	1	1	-	-
Pa.	141	-	13	1	9,840	9,660	-	-	-	-	-	1
E.N. CENTRAL	301	4	64	5	41,659	45,077	12	54	-	2	3	4
Ohio	65	-	18	2	10,378	11,544	8	22	-	-	3	-
Ind.	28	3	7	2	4,911	4,122	-	10	-	-	-	-
Ill.	138	1	16	1	11,472	12,676	4	22	-	2	-	3
Mich.	56	U	22	-	12,816	12,879	U	U	U	U	U	1
Wis.	14	-	1	-	2,082	3,856	-	-	-	-	-	-
W.N. CENTRAL	86	1	9	6	14,558	15,846	30	22	3	-	1	2
Minn.	41	-	5	-	2,104	2,341	5	4	-	-	-	1
Iowa	7	1	4	-	1,488	1,667	7	4	3	-	-	-
Mo.	19	-	-	-	7,464	7,459	6	11	-	-	1	-
N. Dak.	2	-	-	-	120	110	-	-	-	-	-	-
S. Dak.	1	-	-	-	301	293	12	1	-	-	-	-
Nebr.	4	-	-	-	936	1,438	-	-	-	-	-	-
Kans.	12	-	-	6	2,145	2,538	-	2	-	-	-	1
S. ATLANTIC	703	13	45	14	80,336	68,747	52	87	10	5	1	1
Del.	12	-	3	-	1,354	1,517	1	-	-	-	-	-
Md.	78	1	11	-	9,722	11,122	1	19	2	-	-	-
D.C.	95	-	-	-	6,645	5,652	1	2	-	-	-	-
Va.	71	2	16	1	6,955	7,131	3	6	1	-	-	1
W. Va.	2	-	6	-	952	973	1	1	-	-	-	-
N.C.	29	-	8	1	13,875	13,006	2	6	1	1	-	-
S.C.	17	2	-	-	7,475	8,450	-	22	-	-	-	-
Ga.	87	-	-	-	9,359	-	2	6	2	1	-	-
Fla.	312	8	1	12	23,999	20,896	41	25	4	3	1	-
E.S. CENTRAL	48	3	20	2	27,722	27,463	4	41	2	1	1	1
Ky.	13	1	8	1	3,204	3,040	-	7	-	-	1	-
Tenn.	20	1	2	1	10,903	10,924	2	13	2	-	-	-
Ala.	10	-	9	-	7,839	8,862	1	17	-	-	-	1
Miss.	5	1	1	-	5,776	4,637	1	4	-	1	-	-
W.S. CENTRAL	358	19	31	2	39,650	44,278	54	42	4	36	-	7
Ark.	14	-	-	-	3,792	4,261	5	1	1	-	-	-
La.	58	-	2	-	7,242	8,934	1	5	-	-	-	-
Okla.	17	2	7	-	4,873	4,563	10	6	-	-	-	-
Tex.	269	17	22	2	23,743	26,520	38	30	3	36	-	7
MOUNTAIN	147	5	12	1	10,299	10,202	40	23	5	9	-	7
Mont.	3	-	-	1	261	297	-	-	-	-	-	-
Idaho	1	-	-	-	320	340	2	-	1	-	-	-
Wyo.	2	-	2	-	228	257	-	2	-	-	-	-
Colo.	81	-	2	-	2,646	3,194	4	5	-	4	-	3
N. Mex.	6	-	1	-	1,046	1,200	4	-	-	-	-	-
Ariz.	36	-	5	-	3,383	2,819	21	11	1	4	-	2
Utah	7	4	1	-	434	445	5	2	3	1	-	-
Nev.	11	1	1	-	1,981	1,650	4	3	-	-	-	2
PACIFIC	1,241	2	60	4	46,170	50,903	38	37	13	2	1	75
Wash.	34	-	5	-	3,654	3,634	25	17	10	1	-	7
Oreg.	25	-	-	-	1,913	2,547	11	9	3	1	1	-
Calif.	1,163	U	53	4	38,804	42,749	U	U	U	U	U	57
Alaska	9	1	2	-	1,228	1,213	-	6	-	-	-	-
Hawaii	10	1	-	-	571	760	2	5	-	-	-	11
Guam	-	U	-	-	47	78	U	U	U	U	U	1
P.R.	56	4	3	-	902	1,501	2	2	-	1	-	7
V.I.	1	-	-	-	87	193	-	2	-	-	-	-
Pac. Trust Terr.	-	-	-	-	105	421	5	-	-	1	-	18
Amer. Samoa	-	U	-	-	14	-	U	U	U	U	U	1

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 24, 1986 and May 25, 1985 (21st 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	284	164	2,617	5	116	1,262	1,262	186	1,563	76	998	605	18	220	202
NEW ENGLAND	16	-	16	-	-	100	97	-	35	5	51	30	2	4	6
Maine	-	-	-	-	-	-	18	-	-	-	2	2	-	-	-
N.H.	-	-	-	-	-	-	5	-	10	-	15	16	-	1	2
Vt.	1	-	-	-	-	-	14	-	-	-	2	2	-	-	-
Mass.	10	-	15	-	-	96	19	-	1	5	16	4	-	-	4
R.I.	2	-	1	-	-	-	14	-	6	-	1	4	2	2	-
Conn.	3	-	-	-	-	4	27	-	18	-	15	2	-	1	-
MID. ATLANTIC	34	73	1,019	-	11	96	196	7	86	4	97	66	-	26	47
Upstate N.Y.	8	-	7	-	10	48	64	2	33	4	66	33	-	18	8
N.Y. City	11	12	180	-	1	28	40	-	5	-	3	9	-	5	20
N.J.	3	54	821	-	-	7	27	1	20	-	6	2	-	3	7
Pa.	12	7	11	-	-	13	65	4	28	-	22	22	-	-	12
E.N. CENTRAL	10	34	364	-	4	367	165	144	841	2	157	85	-	10	19
Ohio	2	-	-	-	-	43	71	4	82	2	67	14	-	-	-
Ind.	-	-	-	-	-	1	17	2	18	-	16	11	-	-	-
Ill.	4	34	240	-	1	220	40	138	501	-	19	13	-	6	5
Mich.	4	U	-	U	-	50	36	U	127	U	20	8	U	3	13
Wis.	-	-	124	-	3	53	1	-	113	-	35	39	-	1	1
W.N. CENTRAL	7	1	123	1	14	6	66	7	64	2	52	49	1	9	10
Minn.	3	1	22	-	4	2	14	-	1	-	24	11	-	-	1
Iowa	1	-	-	-	1	-	7	1	12	-	9	3	-	-	-
Mo.	2	-	5	-	4	2	24	-	13	-	4	10	-	1	-
N. Dak.	-	-	6	-	1	1	-	-	2	-	2	6	-	-	2
S. Dak.	-	-	-	-	-	-	2	-	1	-	3	1	-	-	-
Nebr.	1	-	-	-	-	-	7	-	-	-	-	1	-	-	-
Kans.	-	-	90	1 §	4	1	12	6	35	2	10	17	1	8	7
S. ATLANTIC	40	7	330	1	29	151	259	2	102	51	398	150	-	7	24
Del.	-	-	1	-	-	-	1	-	-	3	210	-	-	-	-
Md.	7	-	18	1 §	7	20	33	-	6	38	62	62	-	-	1
D.C.	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-
Va.	8	2	15	-	18	17	49	-	17	2	13	3	-	-	1
W. Va.	-	-	2	-	-	23	3	1	30	-	5	-	-	-	9
N.C.	4	-	1	-	1	1	43	-	9	-	18	8	-	-	-
S.C.	2	-	274	-	-	-	24	-	11	-	5	-	-	-	2
Ga.	4	5	7	-	1	8	39	-	10	7	70	47	-	-	-
Fla.	15	-	12	-	2	80	65	1	19	1	15	30	-	7	11
E.S. CENTRAL	6	2	3	-	-	-	72	1	17	-	18	6	-	1	1
Ky.	2	-	-	-	-	-	12	-	3	-	1	1	-	1	1
Tenn.	-	-	1	-	-	-	30	1	12	-	5	1	-	-	-
Ala.	2	-	-	-	-	-	22	-	1	-	12	2	-	-	-
Miss.	2	2	2	-	-	-	8	-	1	-	-	2	-	-	-
W.S. CENTRAL	21	19	351	3	28	81	105	8	109	2	30	73	11	48	18
Ark.	-	-	275	-	2	-	14	-	7	-	2	10	-	-	1
La.	4	-	-	-	-	9	15	-	-	-	4	2	-	-	-
Okla.	2	-	6	-	4	-	14	N	N	2	24	61	-	-	1
Tex.	15	19	70	3 †	22	72	62	8	102	-	-	-	11	48	16
MOUNTAIN	8	28	194	-	10	354	51	16	165	2	101	28	4	5	4
Mont.	-	1	1	-	1	136	7	1	5	1	6	3	-	-	-
Idaho	1	-	-	-	-	63	1	-	2	-	26	-	-	-	1
Wyo.	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-
Colo.	1	-	2	-	4	5	9	1	7	1	24	10	-	-	-
N. Mex.	-	-	16	-	5	3	6	N	N	-	9	4	-	-	2
Ariz.	3	27	175	-	-	147	14	14	139	-	24	5	-	1	1
Utah	2	-	-	-	-	-	6	-	9	-	11	6	1	1	-
Nev.	1	-	-	-	-	-	6	-	3	-	-	-	3	3	-
PACIFIC	142	-	217	-	20	107	251	1	144	8	94	118	-	110	73
Wash.	11	-	47	-	7	1	34	-	5	5	38	18	-	3	2
Oreg.	12	-	-	-	2	3	20	N	N	3	8	17	-	-	1
Calif.	119	U	151	U	10	94	188	U	126	U	44	77	U	105	47
Alaska	-	-	-	-	-	-	8	-	4	-	1	3	-	-	1
Hawaii	-	-	19	-	1	9	1	1	9	-	3	3	-	2	22
Guam	1	U	3	U	-	10	-	U	2	U	-	-	U	2	1
P.R.	3	-	18	-	-	46	3	-	16	-	5	2	-	58	9
V.I.	-	-	-	-	-	10	-	2	9	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	-	-	1	1	3	-	-	-	-	-	-
Amer. Samoa	-	U	1	U	-	-	-	U	-	U	-	-	U	-	-

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

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 24, 1986 and May 25, 1985 (21st 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	10,065	10,002	4	8,060	8,045	24	98	89	2,169
NEW ENGLAND	203	225	1	266	272	-	4	1	2
Maine	13	7	-	25	19	-	-	-	-
N H	6	3	-	7	11	-	-	-	-
Vt	6	-	1	9	4	-	-	-	-
Mass	99	116	-	124	166	-	3	1	-
R I	14	6	-	19	21	-	-	-	1
Conn	65	93	-	82	51	-	1	-	1
MID ATLANTIC	1,489	1,352	-	1,608	1,459	-	10	1	181
Upstate N Y	69	103	-	244	239	-	1	1	29
N Y City	804	850	-	787	743	-	5	-	1
N J	286	275	-	286	161	-	3	-	5
Pa	330	124	-	291	316	-	1	-	146
E N CENTRAL	410	486	1	1,019	978	-	7	14	44
Ohio	53	61	-	171	181	-	1	14	5
Ind	50	36	1	119	117	-	-	-	9
Ill	222	264	-	457	424	-	1	-	15
Mich	59	103	U	221	201	-	4	-	5
Wis	26	22	-	51	55	-	1	-	10
W N CENTRAL	104	107	-	239	207	7	5	3	330
Minn	18	26	-	55	39	-	1	-	35
Iowa	5	14	-	22	30	1	-	-	74
Mo	55	47	-	121	98	6	4	1	37
N Dak	2	-	-	4	2	-	-	-	84
S Dak	1	4	-	10	10	-	-	-	65
Nebr	8	6	-	4	9	-	-	-	5
Kans	15	10	-	23	19	-	-	2	30
S ATLANTIC	2,862	2,492	-	1,557	1,682	4	13	28	539
Del	16	16	-	16	16	-	-	-	-
Md	192	169	-	111	152	1	3	3	306
D C	140	147	-	53	75	-	1	-	-
Va	177	134	-	142	142	1	3	7	80
W Va	8	4	-	47	42	-	2	3	11
N C	199	276	-	219	208	1	2	5	3
S C	279	301	-	171	193	-	-	9	15
Ga	383	-	-	229	269	1	-	1	67
Fla	1,468	1,445	-	569	585	-	2	-	57
E S CENTRAL	669	835	-	714	710	3	-	13	124
Ky	29	32	-	179	141	2	-	1	36
Tenn	261	253	-	201	225	1	-	6	56
Ala	237	282	-	241	239	-	-	2	32
Miss	142	268	-	93	105	-	-	4	-
W S CENTRAL	2,099	2,530	-	979	878	7	5	27	339
Ark	101	126	-	115	87	4	-	1	75
La	355	425	-	171	138	1	-	-	7
Okla	64	69	-	95	111	2	1	21	28
Tex	1,579	1,910	-	598	542	-	4	5	229
MOUNTAIN	225	302	-	176	201	2	5	2	353
Mont	2	1	-	7	24	-	1	1	129
Idaho	4	3	-	5	11	-	-	-	-
Wyo	-	5	-	-	4	-	-	1	164
Colo	73	73	-	10	27	-	1	-	-
N Mex	26	36	-	40	38	1	-	-	3
Ariz	96	167	-	82	85	-	1	-	57
Utah	4	3	-	17	6	1	2	-	-
Nev	20	14	-	15	6	-	-	-	-
PACIFIC	2,004	1,673	2	1,502	1,658	1	49	-	257
Wash	48	57	2	87	96	-	2	-	-
Oreg	43	36	-	54	55	-	-	-	-
Calif	1,894	1,548	U	1,235	1,378	-	44	-	249
Alaska	-	1	-	24	56	1	1	-	8
Hawaii	19	31	-	102	73	-	2	-	-
Guam	1	2	U	30	16	-	-	-	-
P R	333	340	-	119	128	-	2	-	19
V I	-	1	-	1	1	-	-	-	-
Pac. Trust Terr.	112	40	-	13	29	-	27	-	-
Amer. Samoa	-	-	U	3	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending May 24, 1986 (21st Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	654	448	128	45	14	19	55
Boston, Mass.	163	104	39	8	5	7	22
Bridgeport, Conn.	42	24	12	3	2	1	-
Cambridge, Mass.	33	24	5	1	2	1	4
Fall River, Mass.	34	31	3	-	-	-	3
Hartford, Conn.	51	29	13	6	2	1	1
Lowell, Mass.	24	18	4	2	-	-	1
Lynn, Mass.	18	13	5	-	-	-	-
New Bedford, Mass. §	23	22	1	-	-	-	1
New Haven, Conn.	58	40	11	4	1	2	1
Providence, R.I.	69	41	15	10	-	3	10
Somerville, Mass.	10	8	1	1	-	-	3
Springfield, Mass.	49	34	10	3	1	1	3
Waterbury, Conn.	30	25	4	1	-	-	3
Worcester, Mass.	50	35	5	6	1	3	3
MID ATLANTIC	2,751	1,796	574	234	65	82	125
Albany, N.Y.	52	34	11	3	2	2	2
Allentown, Pa.	17	16	1	-	-	-	-
Buffalo, N.Y.	129	86	31	9	2	1	6
Camden, N.J.	35	22	8	4	1	-	-
Elizabeth, N.J.	19	16	2	1	-	-	-
Erie, Pa.†	45	37	7	1	-	-	3
Jersey City, N.J.	45	27	10	6	1	1	1
N.Y. City, N.Y.	1,400	882	302	147	37	32	58
Newark, N.J.	84	42	18	10	8	6	7
Paterson, N.J.	35	21	6	4	1	3	3
Philadelphia, Pa.	420	261	102	24	9	24	24
Pittsburgh, Pa.†	65	44	19	1	-	1	2
Reading, Pa.	30	25	5	-	-	-	2
Rochester, N.Y.	139	105	19	10	1	4	9
Schenectady, N.Y.	28	26	2	-	-	-	2
Scranton, Pa.†	27	22	4	-	-	1	-
Syracuse, N.Y.	96	72	14	5	2	3	3
Trenton, N.J.	33	16	5	8	1	3	-
Utica, N.Y.	20	16	4	-	-	-	1
Yonkers, N.Y.	32	26	4	1	-	1	2
E.N. CENTRAL	2,330	1,467	551	173	59	80	102
Akron, Ohio	71	41	18	5	3	4	1
Canton, Ohio	37	31	6	-	-	-	3
Chicago, Ill.§	564	361	125	46	10	22	16
Cincinnati, Ohio	171	103	49	11	6	2	19
Cleveland, Ohio	172	99	44	17	3	9	9
Columbus, Ohio	130	81	35	8	5	1	2
Dayton, Ohio	120	71	23	14	9	3	4
Detroit, Mich.	255	145	64	30	10	6	8
Evansville, Ind.	42	36	5	1	-	-	-
Fort Wayne, Ind.	51	37	10	4	-	-	5
Gary, Ind.	17	10	2	3	1	1	1
Grand Rapids, Mich.	61	43	13	1	2	2	9
Indianapolis, Ind.	192	104	62	13	4	9	6
Madison, Wis.	39	29	2	3	-	5	2
Milwaukee, Wis.	138	95	32	4	1	6	6
Peoria, Ill.	44	31	8	1	1	3	2
Rockford, Ill.	34	22	10	-	-	2	2
South Bend, Ind.	51	35	12	3	-	1	1
Toledo, Ohio	90	57	19	6	4	4	6
Youngstown, Ohio	51	36	12	3	-	-	-
W.N. CENTRAL	695	474	135	43	17	26	30
Des Moines, Iowa	75	52	18	4	-	1	2
Duluth, Minn.	32	24	6	1	-	1	1
Kansas City, Kans.	34	24	6	2	1	1	2
Kansas City, Mo.	100	67	24	4	3	2	5
Lincoln, Nebr.	25	18	7	-	-	-	4
Minneapolis, Minn.	83	56	14	10	2	1	6
Omaha, Nebr.	78	62	8	1	2	5	3
St. Louis, Mo.	146	94	26	14	5	7	2
St. Paul, Minn.	58	42	7	3	2	4	-
Wichita, Kans.	64	35	19	4	2	4	5
S. ATLANTIC	1,212	746	291	99	29	44	45
Atlanta, Ga.	177	114	38	15	2	8	5
Baltimore, Md.	232	125	60	24	11	12	12
Charlotte, N.C.	87	54	24	6	-	3	3
Jacksonville, Fla.	94	52	26	6	4	6	2
Miami, Fla. §	100	64	28	5	-	3	-
Norfolk, Va.	66	45	16	3	-	2	5
Richmond, Va.	80	48	19	8	3	2	10
Savannah, Ga.	23	13	6	1	-	3	-
St. Petersburg, Fla.	87	78	6	3	-	-	3
Tampa, Fla.	79	45	21	4	3	3	3
Washington, D.C.	163	89	44	23	5	2	2
Wilmington, Del.	24	19	3	1	1	-	-
E.S. CENTRAL	907	557	219	59	36	36	45
Birmingham, Ala.	137	87	35	13	2	-	4
Chattanooga, Tenn.	58	38	11	5	3	1	2
Knoxville, Tenn.	91	61	23	4	2	1	7
Louisville, Ky.	136	79	47	3	6	1	7
Memphis, Tenn.	209	114	42	17	8	28	6
Mobile, Ala.	103	70	16	5	11	1	7
Montgomery, Ala.	66	43	12	6	1	4	7
Nashville, Tenn.	107	65	33	6	3	-	5
W.S. CENTRAL	1,289	737	333	127	47	45	45
Austin, Tex.	51	32	10	7	1	1	2
Baton Rouge, La.	46	21	16	5	3	1	1
Corpus Christi, Tex.	39	22	9	5	2	1	2
Dallas, Tex.	202	116	49	21	7	9	3
El Paso, Tex.	52	29	13	6	2	2	2
Fort Worth, Tex.	94	60	14	9	7	4	5
Houston, Tex.	283	134	97	33	11	8	6
Little Rock, Ark.	65	43	12	7	1	2	7
New Orleans, La.	137	80	37	14	5	1	-
San Antonio, Tex.	183	112	44	10	7	10	13
Shreveport, La.	50	36	10	4	-	-	-
Tulsa, Okla.	87	52	22	6	1	6	4
MOUNTAIN	627	384	141	57	25	20	34
Albuquerque, N.Mex.	84	46	26	2	7	3	6
Colo. Springs, Colo.	52	30	9	8	3	2	8
Denver, Colo.	88	57	17	9	2	3	3
Las Vegas, Nev.	107	67	27	11	1	1	7
Ogden, Utah	23	14	4	4	-	1	3
Phoenix, Ariz.	122	67	29	12	9	5	2
Pueblo, Colo.	25	14	9	1	-	1	1
Salt Lake City, Utah	46	31	8	3	1	3	-
Tucson, Ariz.	80	58	12	7	2	1	4
PACIFIC	1,973	1,300	378	182	59	50	109
Berkeley, Calif.	24	14	5	1	2	2	-
Fresno, Calif.	110	73	21	8	4	4	5
Glendale, Calif. §	27	24	3	-	-	-	2
Honolulu, Hawaii	74	53	11	6	2	2	7
Long Beach, Calif.	103	69	27	4	2	1	15
Los Angeles, Calif. §	552	345	111	64	22	6	18
Oakland, Calif.	89	61	11	13	2	2	1
Pasadena, Calif.	31	20	7	2	-	2	4
Portland, Oreg.	140	97	23	11	7	2	9
Sacramento, Calif.	130	87	22	8	5	8	9
San Diego, Calif.	169	107	32	16	6	8	16
San Francisco, Calif.	149	93	32	21	1	2	4
San Jose, Calif.	136	89	27	13	4	3	11
Seattle, Wash.	147	102	29	12	1	3	2
Spokane, Wash.	54	37	11	2	1	3	4
Tacoma, Wash.	38	29	6	1	-	2	2
TOTAL	12,438	7,909	2,750	1,019	351	402	590

* 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.

Arboviral Infections — Continued

Health; KL Quickenden, PhD, JK Gedrose, State Epidemiologist, Montana State Dept of Health and Environmental Sciences; PA Stoesz, MD, State Epidemiologist, Nebraska State Dept of Health; W Crans, PhD, New Jersey Agricultural Experiment Station, New Brunswick, WE Parkin, DVM, State Epidemiologist, New Jersey State Dept of Health; P Hayes, HF Hull, MD, State Epidemiologist, New Mexico Health and Environment Dept; D White, PhD, M Grayson, PhD, R Deibel, MD, DL Morse, MD, State Epidemiologist, Bureau of Communicable Disease Control, Center for Laboratories and Research, New York State Dept of Health; N Newton, PhD, Vector Control Br, Environmental Health Section, Div of Health Svcs, F Crout, PhD, JN MacCormick, MD, State Epidemiologist, North Carolina Div of Health Svcs; K Tardif, JL Pearson, DrPH, State Epidemiologist, North Dakota State Dept of Health; E Peterson, M Parsons, MS, TJ Halpin, MD, State Epidemiologist, Vector-Borne Disease Unit, Ohio Dept of Health; EJ Witte, VMD, State Epidemiologist, Pennsylvania State Dept of Health; J Cookman, S Morin, Dept of Environmental Management, RA Keenlyside, MBBS, State Epidemiologist, Rhode Island Dept of Health; KA Senger, State Epidemiologist, South Dakota State Dept of Health; JG Hamm, JR Oates, SJ Jones, WP Kelly, Memphis-Shelby County Health Dept, RH Hutcheson, Jr, MD, State Epidemiologist, Tennessee State Dept of Health and Environment; D Sprenger, PhD, Harris County Mosquito Control District, Houston, B Elliot, PhD, RL Johns, PhD, C Reed, MPH, CE Alexander, MD, State Epidemiologist, Texas Dept of Health; BT Haslam, CR Nichols, MPA, State Epidemiologist, Utah Dept of Health; S Jenkins, MD, M Cader, MD, GR Miller, Jr, MD, State Epidemiologist, Virginia State Dept of Health; JM Kobayashi, MD, State Epidemiologist, Washington Dept of Social and Health Svcs; W Schell, JP Davis, MD, State Epidemiologist, Wisconsin State Dept of Health and Social Svcs; Div of Vector-Borne Viral Diseases, Center for Infectious Diseases, CDC.

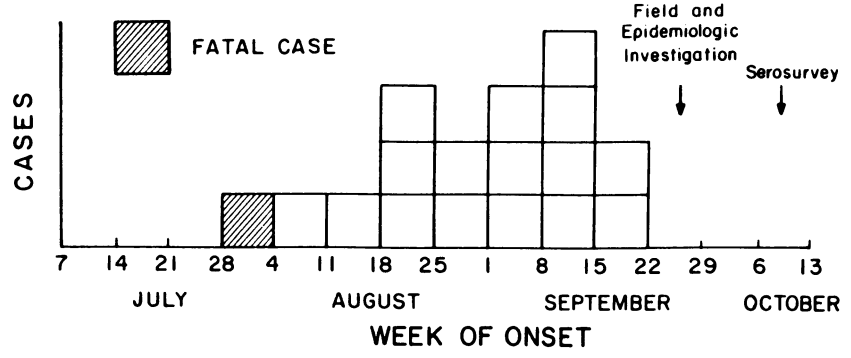
Editorial Note: Arboviral infections remain important in the differential diagnosis of CNS infections occurring in the summer and early fall. SLE, the most important cause of epidemic viral encephalitis in the United States, led to 1,815 reported cases in a nationwide outbreak in 1975 (Table 1) (*1*). More recently, regional outbreaks occurred in Florida (1977) (*2*), Houston, Texas (1980) (*3*), and southern California (1984) (*4,5*).

During the last decade, western equine encephalitis has been sporadic in midwestern and western states. However, extensive outbreaks occurred in the past, leading to over 3,400 cases in 1941 (*6*). As recently as 1975, 133 cases were reported in an outbreak in the North Red River Valley (*7,8*). Eastern equine encephalitis is a disease of low frequency (Table 1), occurring principally in Atlantic and Gulf Coast states; however, it is associated with significant morbidity and mortality (50%). In the United States, nearly all reported cases of CNS infections from California serogroup viruses are caused by LaCrosse virus. LaCrosse encephalitis is endemic in the upper midwest, affecting principally children. In these states, the incidence of LaCrosse encephalitis is similar to that of Reye syndrome, another important CNS disorder of children (*9*).

References

1. Monath TP. Epidemiology. In: Monath TP, ed. St. Louis encephalitis. Washington, D.C.: American Public Health Association 1980;239-312.
2. Nelson DB, Kappus KD, Janowski HT, Buff E, Wellings FM, Schneider NJ. St. Louis encephalitis—

FIGURE 3. St. Louis encephalitis cases, by week of onset — Mesa County, Colorado, 1985



Arboviral Infections — Continued

Florida 1977. Patterns of a widespread outbreak. Am J Trop Med Hyg 1983;32:412-6.
3. Reed C. Unpublished report.
4. CDC. St. Louis encephalitis—California. MMWR 1984;33:649-51.
5. CDC. Arboviral infections of the central nervous system—United States, 1984. MMWR 1985;34: 283-6, 291-4.
6. Leake JP. Epidemic of infectious encephalitis. Public Health Reports 1941;56:1902-5.
7. Leech RW, Harris JC, Johnson RM, et al. 1975 encephalitis epidemic in North Dakota and western Minnesota. An epidemiologic, clinical and neuropathologic study. Minn Med 1983;64:545-8.
8. Potter ME, Currier RW, Pearson JE, et al. Western equine encephalomyelitis in horses in the Northern Red River Valley. J Am Vet Med Assoc 1977;170:1396-9.
9. CDC. Reye syndrome—United States, 1985. MMWR 1986;35:66-8, 73-4.

Chronic Fatigue Possibly Related to Epstein-Barr Virus — Nevada

From November 1984 through August 1985, approximately 90 patients evaluated for persistent fatigue were diagnosed as having chronic Epstein-Barr virus (CEBV) disease by a two-physician community internal medicine practice near Lake Tahoe, Nevada. The diagnoses were made by detecting antibody to the diffuse (EA-D) or the restricted (EA-R) components of early antigen of EBV, as suggested by two recent studies (*1,2*).

Because of controversy about whether CEBV disease exists, two serologic studies were conducted to evaluate whether a syndrome of chronic fatigue could be statistically associated with a specific pattern of antibody titers against EBV. Fifteen "case" patients, felt to be the most likely to have CEBV, were identified by interviewing 134 of the 139 patients tested for EBV serology in the internal medicine practice between January 1, and August 20, 1985. By definition, these patients had persistent or relapsing unexplained fatigue for at least 2 months, which forced them to stop usual daily activities for at least 2 weeks. Other less universal symptoms included intermittent low-grade fever, sore throat, myalgias, arthralgias, and headaches. All 15 patients were white; 13 were female. The median age was 40 years (range 13-52 years).

In the first serologic study, the 15 patients were compared with 118 of the 119 patients who had serologic testing for EBV (the serologic test results on one patient were not available). All 118 of these patients were white; 79 (66.9%) were female. The median age was 36 years (range 10-71 years). The case patients were more likely to have reciprocal EA-D titers of 160 or higher (45.5%, compared with 11.6%; $p = 0.014$) and EBV viral capsid antigen IgG (VCA-IgG) 160 or greater (80.0%, compared with 51.7%; $p = 0.033$) in the first serum tested. No evidence of acute EBV infection, manifested by positive IgM titers to VCA, was detected in either the cases or the others tested.

Detailed information on physical findings was obtained for all 15 case patients and from 11 of 18 other patients whose duration and severity of illness met the clinical case criteria but who, on review of their medical records, had other possible etiologies. Palpable splenomegaly was noted at some time during the illnesses of 13 of the 15 case patients and two of the 11 other patients ($p = 0.0002$).

In the second serologic study, blood specimens for EBV serologic testing were collected in October 1985 from the 15 case patients and from 30 age-, sex-, and race-matched controls. The controls consisted of patients and office workers who had no complaints of fatigue and had not previously undergone EBV serologic testing. The sera were tested simultaneously by the commercial reference laboratory used by the two physicians, by the EBV laboratory at CDC, and by a laboratory at Georgetown University in Washington, D.C. Case patients tended to have higher titers of VCA-IgG and of anti-EA than controls, but the specific test results and the tests in which the differences were significant varied considerably among the laboratories.

IgG antibody titers to herpes simplex virus (HSV) types 1 and 2 and cytomegalovirus (CMV) were also measured. Case patients had significantly higher CMV titers than controls, both by

Epstein-Barr Virus — Continued

indirect hemagglutination (reciprocal geometric mean titer [GMT] 292, compared with 31, p = 0.046) and by enzyme immunoassay (GMT 276, compared with 74; p = 0.04). Case patients also tended to have higher titers to HSV-1 (GMT 154, compared with 82) and to HSV-2 (GMT 140, compared with 34).

To help evaluate the reproducibility of the EBV serologic test results within a single laboratory, 19 sera, obtained earlier from 12 of the case patients and subsequently frozen, were retested in the same laboratory. Fourfold or greater variations between the initial and repeated titers were detected in 17.6% of the samples tested for anti-EA-D, 26.3% tested for VCA-IgG and 33.3% tested for anti-EA-R. All sera with fourfold or greater changes in anti-EA-D or VCA-IgG had a decrease in titer with the repeat testing, and all those with changes in anti-EA-R had increased titers.

Reported by D Peterson, MD, P Cheney, MD, Incline Village, M Ford, MPH, B Hunt, Washoe County District Health Dept, G Reynolds, Acting State Epidemiologist, Nevada Div of Health; Viral Exanthems and Herpesvirus Br, Epidemiology Office, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: In January 1985, two publications reported the association of a chronic, mononucleosis-like illness with evidence of persistent active Epstein-Barr virus activity among young, previously healthy adults (*1,2*). These patients had no other discernible cause for their illnesses, and many demonstrated an apparently unusual pattern of anti-EBV antibodies when compared with controls. However, several questions have been raised about these studies, including whether CEBV actually exists (*3-5*).

In the Nevada investigation, the 15 case patients were more likely to have abnormal EBV serologic markers than other patients, and, in addition to increased fatigue, were more likely to have palpable splenomegaly. These findings suggest that, as a group, these patients have an abnormality, or abnormalities, associated in some way with high antibody titers to EBV and CMV.

The study highlights several problems associated with the diagnosis of CEBV. First, the clinical syndrome is comprised of a wide range of nonspecific symptoms, and is inadequate for diagnosing CEBV without a confirmatory laboratory test.

Second, "elevated" anti-EBV serologic titers do not prove that a chronic illness in an individual is due to EBV. There is a great deal of overlap in the antibody titers of case patients and the general population, indicating that "normal" titers can vary substantially. In a recently published study, several asymptomatic persons followed for up to 8 years after recovery from acute infectious mononucleosis maintained anti-EA titers well into the range considered to indicate CEBV (*6*).

Third, the reproducibility of the serologic tests for EBV is poor, both within and between laboratories. The currently available indirect immunofluorescence technique for EBV serologic tests necessitates a subjective measurement of the fluorescence produced and is subject to variability between cell lots and between individual technicians. Comparability of titers can only be confirmed by testing specimens in parallel.

Currently available data neither prove nor disprove the hypothesis that EBV activity is responsible for chronic illness, but it is clear that the diagnosis of CEBV using current clinical and laboratory criteria in an individual patient is unreliable. Further examinations of immune function in these patients, as well as studies for other possible etiologies, are needed to define this syndrome and provide a framework for epidemiologic and therapeutic studies.

In the meantime, CEBV should be a diagnosis of exclusion. Physicians evaluating patients thought to have CEBV should continue to search for the more definable, and possibly treatable, conditions that may be responsible for their symptoms, such as endocrine and autoimmune diseases; malignancies; chronic heart, liver, kidney, and pulmonary disease; anxiety and depression; and chronic infectious diseases, such as CMV and tuberculosis.

The patients reported here are only a portion of the cases reported to CDC with chronic,

Epstein-Barr Virus — Continued

often severe, debilitating disease diagnosed as CEBV. Further etiologic studies are indicated, including known viruses such as EBV, CMV, and adenoviruses, in addition to viruses which have not yet been identified. Once the syndrome is better defined, epidemiologic and therapeutic studies can be initiated.

References

1. Jones JF, Ray CG, Minnich LL, Hicks MJ, Kibler R, Lucas DO. Evidence for active Epstein-Barr virus infection in patients with persistent, unexplained illnesses: elevated anti-early antigen antibodies. Ann Intern Med 1985;102:1-7.
2. Straus SE, Tosato G, Armstrong G, et al. Persisting illness and fatigue in adults with evidence of Epstein-Barr virus infection. Ann Intern Med 1985;102:7-16.
3. Armstrong CW, Wetterhall SF. Epstein-Barr virus and unexplained illness [Letter]. Ann Intern Med 1985;102:722.
4. Jones SR. Epstein-Barr virus and unexplained illness [Letter]. Ann Intern Med 1985;102:723.
5. Merlin TL. Chronic mononucleosis: pitfalls in the laboratory diagnosis. Hum Pathol 1986;17:2-8.
6. Horwitz CA, Henle W, Henle G, Rudnick H, Latts E. Long-term serological follow-up of patients for Epstein-Barr virus after recovery from infectious mononucleosis. J Infect Dis 1985;151:1150-3.

FIGURE I. Reported measles cases — United States, weeks 17-20, 1986