CENTERS FOR DISEASE CONTROL

December 4, 1981 / Vol. 30 / No. 47

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

International Notes

Sudden, Unexpected, Nocturnal Deaths among Southeast Asian Refugees

Since February 1981, CDC has been notified of 38 cases of sudden death among Southeast Asian refugees that were investigated by medical examiners or coroners . All but one of these refugees were men, and all apparently died during sleep. Thirty-three deaths occurred among Laotian refugees, 25 of whom, including the 1 woman, were Hmong, an ethnic group from the northern Laotian highlands. Four persons who died suddenly were Vietnamese, and 1 was Kampuchean. Information currently available for 34 persons indicates that they had been in the United States from 5 days to 52 months (median 6 months) before death.

Based on approximations of the current Southeast Asian refugee population in the United States, the estimated sudden death rate per 100,000 is 46 for Hmong, 12 for other Laotians, 1.6 for Kampucheans, and 1.1 for Vietnamese. Persons who have died ranged in age from 19 to 63 years (median 32.5); 31 persons were between 25 and 44 years of age. The rate of sudden death for Laotian men in the United States between the ages of 25 and 44 was 87/100,000 in the past year.

The first such death occurred on July 15, 1977, and the most recent was on October 28, 1981. The increasing number of reported deaths parallels the accelerating influx of Laotians into the United States since the summer of 1979 (Figure 1). Deaths have been reported from California (12), Minnesota (8), Oregon (5), Washington (3), Illinois (3), Rhode Island (2), and Iowa, Ohio, Oklahoma, Texas, and Wisconsin (1 each). The geographic distribution of these deaths reflects the distribution of Laotian refugees in this country.

Interviews with the families of 34 persons who died have supplemented information from medical examiners' and coroners' reports. The deaths of 29 persons were witnessed and occurred between 9:30 pm and 7:00 am; 28 persons appeared to be asleep, and one was just falling asleep. All were in good health, and none had complained of significant symptoms before going to bed. Witnesses were alerted or awakened by abnormal respiratory sounds and/or by a brief groan. All victims were unresponsive when discovered. Terminal respirations were described as deep, labored, and irregular, but without stridor or wheezing. Some witnesses heard gurgling and observed frothy sputum, but most did not. Several dying persons developed tonic rigidity during the episode, but the majority remained flaccid. Seven became incontinent of urine and/or stool. The witnesses described no indications of pain or terrifying dreams. Signs of life ceased within minutes. Paramedical personnel documented ventricular fibrillation in 2 persons, but were unable to resuscitate them. Five persons whose deaths were unwitnessed died sometime between midnight and 9:00 am; they were found in bed, and it appeared as though death had occurred during sleep. The circumstances of the 4 deaths for which information was obtained only from the medical examiner's or coroner's report were similar to those of the deaths described in interviews.

Nocturnal Deaths — Continued

Interviews with family members indicated that in the 24-hour period preceding death, there had been no unusual physical illness, activities, emotional experiences, or food items or pharmacologically active substances consumed by persons who died. None of the persons who died were related, although one was reported to have had a relative (a paternal first cousin) who had died under similar circumstances in Laos. According to their families, none of the victims manifested clinical signs of the sleep-apnea syndrome, such as obesity, snoring, frequent nocturnal awakening, or hypersomnolence.

Results of autopsies and routine toxicologic screening tests have not identified a cause of death in 30 of the 36 case investigations completed to date by medical examiners and coroners and reviewed subsequently by pathologists at CDC. Three deaths were attributed to coronary atherosclerosis on the basis of coronary artery stenosis, but no evidence was found of acute coronary occlusion or myocardial infarction. None of these 3 individuals were known to have had previous symptoms or histories of coronary disease. Three deaths had been attributed to myocarditis; however, the CDC review committee felt that myocardial inflammation was significant in only 1 case. In the 2 most recent cases, gross autopsy showed no underlying disease process, but microscopic and toxicologic evaluations are not yet completed.

A review of medical-examiner records in Portland, Oregon, done to provide a basis for comparison, showed that for non-Laotian adults of all ages and both sexes, only 1 of 35 apparently natural deaths could not be explained after thorough postmortem evaluations. This review was not restricted to sudden deaths.

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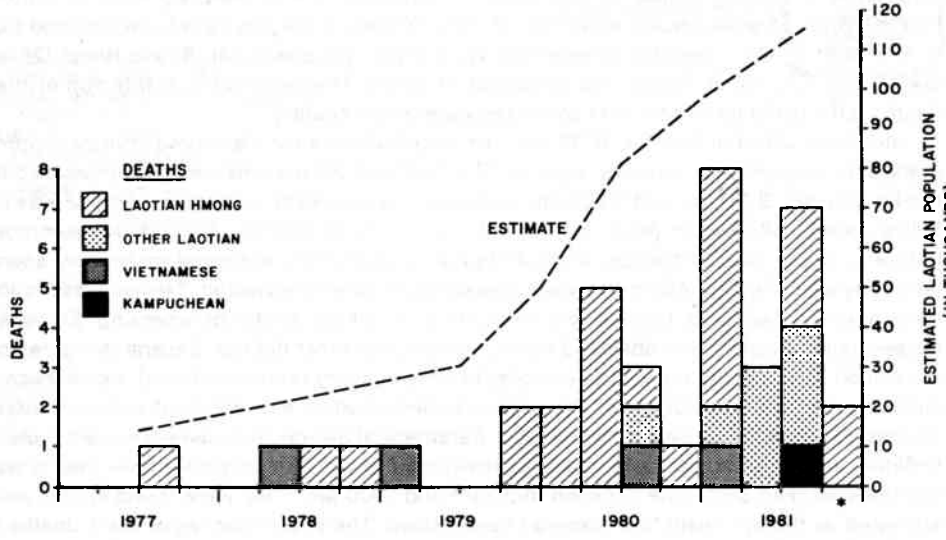
FIGURE 1. Sudden unexpected nocturnal deaths, Southeast Asian refugees, and quarterly estimate of Laotian population, United States, July 1977-October 1981



*October only.

Nocturnal Deaths – Continued

Hauser, MD, San Jose, P Horn, MD, Sacramento County Health Dept, J Masters, MD, Sacramento County Coroner's Office, R Dambacher, R Kornblum, MD, Los Angeles County Dept of Chief Medical Examiner-Coroner, J Chin, MD, State Epidemiologist, California Dept of Health Svcs; M Kalelkar, MD, Cook County Medical Examiner's Office, L Irvin, L Myler, Vermilion County Health Dept, Danville, R Anderson, R Hilbert, MD, Winnebago County Coroner's Office, BJ Francis, MD, State Epidemiologist, Illinois State Dept of Public Health; R Wooters, MD, Polk County Medical Examiner's Office, LA Wintermeyer, MD, State Epidemiologist, Iowa State Dept of Health; Xa Vang, Lao Family Community, Inc, St. Paul, J Godes, MPH, St. Paul Div of Public Health, M McGee, MD, Ramsey County Medical Examiner's Office, Bounleng Dao Leuang, Lao Association of Minneapolis, S DuVander, Minnesota State Refugee Office, G Peterson, MD, Hennepin County Medical Examiner's Office, AG Dean, MD, State Epidemiologist, Minnesota State Dept of Health; Muacha Cherpao, Lao Family Community, Inc., Missoula, Montana; R Fazekas, MD, S Fazekas, MD, Lucas County Coroner's Office, Toledo, TJ Halpin, MD, State Epidemiologist, Ohio State Dept of Health; R Dix, MD, Comanche County Memorial Hospital, Lawton, MA Roberts, PhD, State Epidemiologist, Oklahoma State Dept of Health; L Lewman, MD, Multnomah County Medical Examiner's Office, C Schade, MD, Multnomah County Dept of Health, Kuxeng Yongchu, Portland, JA Googins, MD, State Epidemiologist, Oregon Dept of Human Resources; W Sturner, MD, Office of State Medical Examiners, GA Faich, MD, State Epidemiologist, Rhode Island Dept of Health; N Peerwani, MD, Tarrant County Medical Examiner's Office, Fort Worth, CR Webb, Jr, MD, State Epidemiologist, Texas State Dept of Health; D Reay, MD, King County Medical Examiner Division, M Hurlich, PhD, Dept of Anthropology, University of Washington, Hang Sao, Phengphone Rithvixay, Seattle, J Davelaar, H Lancaster, MD, Pierce County Coroner's Office, Tacoma, J Allard, PhD, State Epidemiologist, Washington State Dept of Social and Health Svcs; P Russell, A Cordero, MD, Outagamie County Coroner's Office, Appleton, JP Davis, MD, State Epidemiologist, Wisconsin State Dept of Health and Social Svcs; Virology Div, Pathology Div, Center for Infectious Diseases, Consolidated Surveillance and Communications Activity, Field Services Div, Epidemiology Program Office, CDC.

Editorial Note: A study of sudden, nontraumatic deaths that occurred in 1 year in a U.S. population was done in Baltimore (*1*). All such deaths that occurred among 20- to 39-year-old men could be explained on the basis of underlying diseases. The causes included cardiovascular diseases (40%), cirrhosis and fatty liver (23%), cerebrovascular diseases (10%), pneumonia (6%), and diseases classified as "other" (21%). Sudden death (i.e., within 24 hours of onset of symptoms) occurred at a rate of 65/100,000 and accounted for 40% of all natural deaths in that age group. In 45% of witnessed episodes, death occurred in less than 2 hours; the proportion of deaths that occurred within minutes was not reported.

Although the review of medical-examiner records in Portland was not restricted by age or sex, the findings suggest that deaths including sudden deaths that remain unexplained after thorough postmortem examination are relatively uncommon.

The epidemiology of adult deaths that are both sudden and unexplained has received little attention. The deaths reported here share several features that suggest they may constitute a distinct syndrome. They occurred at night or in the early morning hours during sleep and involved mostly young, apparently healthy men who had no premonitory symptoms. Descriptions of the terminal events suggested that the transition from apparent health to death occurred within minutes. Almost all deaths remained unexplained after thorough postmortem examination, and several of the others may have been attributed to incidental findings. The estimated rate of sudden, unexpected, nocturnal death (87/100,000) during the past year among Laotian men ages 25-44 is comparable to the sum of the rates of the 4 leading causes of natural death (86.9/100,000) among U.S. males in that age group. These 4 causes account for 32.2% of all natural deaths in that group (*2*).

Similar deaths occurring during sleep have been described among young men in Japan (Pokkuri disease) and among Filipino men in the Philippines and Hawaii (Bangungut) (*3-5*). The consistent autopsy findings were of acute cardiac failure without underlying disease. Witnesses interpreting the terminal groans in these deaths as signs of terror supported the popular notion that deaths resulted from terrifying dreams. Several refugee deaths in this country

Nocturnal Deaths – Continued

were initially described in this manner, and thus were attributed to nightmares. However, careful questioning of the witnesses in the United States indicated that the terminal sounds were those that are often heard following cardiac arrest.

The abruptness of the deaths reported here is compatible with a cardiac dysrhythmia, but the underlying mechanism remains unclear. To date, there is no evidence to suggest a metabolic cause. Several reports of similar deaths occurring at night among young, healthy men in Laos suggest that there might be a genetic or an acquired disorder predisposing these persons to sudden death. To determine whether there is an anatomic basis for these events, a cardiac pathologist is reviewing heart tissue from several cases to reevaluate the findings of the medical examiners, coroners, and the CDC pathologists. Cardiac conduction tissues are being evaluated in 2 instances, and efforts are being made to see that such tissues are obtained in the future. Since these sudden deaths are apparently associated with sleep, studies of selected individuals may be indicated to elucidate physiologic processes during sleep and the possible role of a neurologically mediated triggering mechanism (*6*).

Data from a study of 26 Laotians who died suddenly and of 77 Laotian controls are being analyzed to determine whether the deaths may be associated with geographic regions of their country, current or past occupations, military experience, chronic stresses, refugee-camp experiences, or dietary changes. Surveillance of refugee deaths is being intensified to deter-

(Continued on page 589)

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

DISEASE		47th WEEK ENDING			CUMULATIVE, FIRST 47 WEEKS		
		November 28 1981	November 22 1980	MEDIAN 1976-1980	November 28 1981	November 22 1980	MEDIAN 1976-1980
Aseptic meningitis		154	215	127	8,442	7,135	5,937
Brucellosis		4	5	5	146	167	167
Chickenpox		1,922	2,633	2,326	180,113	168,747	168,747
Encephalitis:	Primary (arthropod-borne & unspec.)	29	25	24	1,301	1,099	1,095
	Post-infectious	2	7	6	77	201	201
Gonorrhea:	Civilian	15,270	22,296	17,003	906,047	912,785	911,665
	Military	335	383	383	24,676	24,490	24,490
Hepatitis:	Type A	427	509	536	22,555	25,594	26,772
	Type B	350	413	276	18,544	16,432	13,475
	Type unspecified	149	219	185	9,873	10,529	7,974
Leprosy		2	2	1	218	195	197
Malaria		9	32	12	1,221	1,822	683
Measles (rubeola)		30	43	155	2,927	13,206	25,592
Meningococcal infections:	Total	67	56	38	3,142	2,436	2,183
	Civilian	67	56	37	3,130	2,418	2,156
	Military	–	–	–	12	18	19
Mumps		101	80	216	4,007	7,903	15,027
Pertussis		19	23	21	1,093	1,538	1,538
Rubella(German measles)		16	37	74	1,929	3,548	11,492
Syphilis (Primary & Secondary):	Civilian	565	528	369	27,933	24,651	21,669
	Military	8	11	9	344	284	284
Tuberculosis		491	504	421	24,661	24,496	26,115
Tularemia		2	6	3	241	205	149
Typhoid fever		1	2	6	529	466	466
Typhus fever, tick-borne (RMSF)		2	3	5	1,155	1,138	1,023
Rabies, animal		67	108	40	6,555	5,845	2,880

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	7
Botulism (Idaho 1, Calif. 1)	76	Paralytic	6
Cholera (La. 1, Tex. 1)	19	Psittacosis	95
Congenital rubella syndrome	11	Rabies, human	1
Diphtheria	4	Tetanus (Okla. 1)	56
Leptospirosis (Hawaii 1)	46	Trichinosis	120
Plague	9	Typhus fever, flea-borne (endemic, murine)	43

TABLE III. Cases of specified notifiable diseases, United States, weeks ending November 28, 1981 and November 22, 1980 (47th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	ENCEPHALITIS		GONORRHEA (Civilian)		HEPATITIS (Viral), by type			LEPROSY
				Primary	Post-infectious			A	B	Unspecified	
	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981	CUM. 1981	CUM. 1980	1981	1981	1981	CUM. 1981
UNITED STATES	154	146	1,922	1,301	77	906,047	912,785	427	350	149	218
NEW ENGLAND	6	4	213	43	8	22,332	23,150	18	30	15	5
Maine	–	–	43	1	–	1,187	1,324	1	1	1	–
N.H.	1	–	16	4	–	818	804	1	3	–	1
Vt.	–	–	1	–	–	406	517	4	1	–	–
Mass.	3	3	73	17	1	9,266	9,770	4	8	12	3
R.I.	–	1	17	1	2	1,344	1,476	3	3	–	–
Conn.	2	–	63	20	5	9,311	9,259	5	14	2	1
MID. ATLANTIC	32	7	67	105	8	108,899	103,300	51	51	27	14
Upstate N.Y.	12	3	52	30	3	19,096	18,470	8	15	9	3
N.Y. City	11	1	15	19	–	44,378	41,187	18	21	8	9
N.J.	3	1	N	16	–	20,532	18,782	25	15	10	2
Pa.	6	2	–	40	5	24,893	24,861	U	U	U	–
E.N. CENTRAL	39	7	1,022	467	11	135,505	142,011	82	57	16	21
Ohio	20	1	40	230	2	42,470	37,289	16	24	1	1
Ind.	2	1	72	141	8	11,232	15,173	22	4	9	–
Ill.	4	–	87	9	–	39,981	44,647	15	6	3	18
Mich.	10	2	549	63	1	29,655	31,868	26	21	3	2
Wis.	3	3	274	24	–	12,167	13,034	3	2	–	–
W.N. CENTRAL	2	21	303	98	6	43,763	43,269	11	12	5	3
Minn.	–	5	–	39	3	6,911	7,250	2	1	4	1
Iowa	–	7	161	30	2	4,791	4,591	2	–	1	–
Mo.	2	4	2	10	–	20,410	18,876	2	9	–	–
N. Dak.	–	–	3	1	–	546	612	1	–	–	–
S. Dak.	–	1	9	1	–	1,163	1,256	3	–	–	–
Nebr.	–	1	6	4	–	3,248	3,370	–	2	–	–
Kans.	–	3	122	13	1	6,694	7,314	1	–	–	2
S. ATLANTIC	13	32	174	140	20	223,027	228,999	48	63	20	12
Del.	–	1	1	–	–	3,529	3,263	1	2	1	–
Md.	1	–	–	24	2	26,150	24,489	1	11	4	2
D.C.	–	–	–	–	–	12,684	15,802	–	1	–	–
Va.	1	9	9	37	4	20,474	20,921	3	12	5	3
W. Va.	–	1	79	21	–	3,304	3,140	–	1	–	–
N.C.	–	1	N	34	1	34,611	34,998	2	3	–	–
S.C.	–	–	30	4	–	21,524	21,415	2	1	–	7
Ga.	–	6	1	2	–	46,240	44,859	3	11	–	–
Fla.	11	14	54	18	13	54,511	60,112	36	21	10	–
E.S. CENTRAL	27	12	35	141	7	75,751	74,657	8	26	3	–
Ky.	–	1	32	21	2	9,490	10,804	2	1	–	–
Tenn.	8	5	N	81	1	28,863	26,907	3	4	2	–
Ala.	19	4	2	22	2	22,815	22,544	1	20	1	–
Miss.	–	2	1	17	2	14,583	14,402	2	1	–	–
W.S. CENTRAL	8	43	11	115	4	119,275	115,158	60	19	20	22
Ark.	–	5	–	6	–	9,088	9,346	2	–	–	1
La.	–	2	N	7	1	20,645	20,571	26	5	6	–
Okla.	3	7	–	24	1	13,173	11,508	10	8	5	–
Tex.	5	29	11	78	2	76,369	73,733	22	6	9	21
MOUNTAIN	3	5	15	46	3	35,705	34,916	24	8	5	5
Mont.	–	–	–	2	–	1,300	1,338	–	–	–	–
Idaho	–	–	–	–	–	1,568	1,533	3	–	–	1
Wyo.	–	–	–	1	–	944	1,008	–	–	–	–
Colo.	3	1	–	14	1	9,466	9,498	9	2	3	–
N. Mex.	–	–	–	–	–	3,880	4,219	6	4	–	–
Ariz.	U	1	U	19	–	10,762	9,255	U	U	U	3
Utah	–	–	–	9	2	1,780	1,766	5	–	2	–
Nev.	–	3	15	1	–	6,005	6,299	1	2	–	1
PACIFIC	24	15	82	146	10	141,790	147,325	125	84	38	136
Wash.	1	–	64	12	1	11,620	12,736	14	8	–	5
Oreg.	–	–	–	6	1	8,399	10,193	15	8	6	5
Calif.	14	15	5	119	8	115,382	117,827	91	63	32	87
Alaska	–	–	1	5	–	3,648	3,626	–	5	–	–
Hawaii	9	–	12	4	–	2,741	2,943	5	–	–	39
Guam	U	–	U	–	–	81	124	U	U	U	–
P.R.	–	–	5	1	–	3,002	2,469	1	–	1	2
V.I.	–	–	–	–	–	242	108	–	–	–	–
Pac. Trust Terr.	U	–	U	–	–	329	384	U	U	U	16

N: Not notifiable U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending November 28, 1981 and November 22, 1980 (47th week)

REPORTING AREA	MALARIA		MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS (Total)		MUMPS		PERTUSSIS	RUBELLA		
	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1980
UNITED STATES	9	1,221	30	2,927	13,206	67	3,142	101	4,007	19	16	1,929	3,548
NEW ENGLAND	–	64	–	87	675	4	203	8	226	1	2	127	212
Maine	–	1	–	5	33	–	24	–	40	–	–	33	69
N.H.	–	3	–	8	331	–	21	–	23	–	–	51	40
Vt.	–	6	–	3	226	–	13	1	9	–	–	–	3
Mass.	–	30	–	61	58	2	65	7	81	1	1	30	70
R.I.	–	3	–	–	2	1	18	–	28	–	–	–	9
Conn.	–	21	–	10	25	1	62	–	45	–	1	13	21
MID. ATLANTIC	4	162	9	946	3,844	14	472	14	652	5	4	227	571
Upstate N.Y.	1	35	1	227	714	7	153	6	142	3	4	111	218
N.Y. City	2	61	1	102	1,198	1	76	2	89	–	–	55	101
N.J.	1	49	–	58	851	2	100	2	103	–	–	48	101
Pa.	–	17	7	559	1,081	4	143	4	318	2	–	13	151
E.N. CENTRAL	1	61	6	92	2,447	17	387	43	1,181	6	–	401	848
Ohio	–	8	4	20	380	13	153	30	288	–	–	3	8
Ind.	–	9	–	9	93	–	46	2	125	4	–	137	359
Ill.	–	17	–	25	348	3	95	–	205	–	–	102	173
Mich.	1	27	–	33	250	1	86	8	352	2	–	37	129
Wis.	–	–	2	5	1,376	–	7	3	211	–	–	122	179
W.N. CENTRAL	–	33	–	10	1,339	3	147	5	228	1	–	79	209
Minn.	–	14	–	3	1,103	–	47	–	8	1	–	8	28
Iowa	–	4	–	1	20	–	26	1	70	–	–	4	9
Mo.	–	3	–	1	66	2	45	–	22	–	–	2	45
N. Dak.	–	1	–	–	–	–	2	–	–	–	–	–	6
S. Dak.	–	1	–	–	–	1	9	–	1	–	–	–	2
Nebr.	–	2	–	4	89	–	–	–	3	–	–	1	4
Kans.	–	8	–	1	67	–	18	4	124	–	–	64	115
S. ATLANTIC	2	149	14	474	1,974	9	716	7	555	1	–	142	346
Del.	–	1	–	–	3	–	4	–	10	–	–	1	1
Md.	–	35	–	5	83	1	53	1	97	–	–	1	68
D.C.	–	9	–	1	5	–	6	–	3	–	–	–	1
Va.	2	33	–	9	339	6	96	2	127	–	–	7	41
W. Va.	–	4	–	9	10	–	27	–	105	–	–	22	26
N.C.	–	13	–	3	130	1	109	–	22	–	–	5	47
S.C.	–	2	–	2	159	1	89	–	18	–	–	8	58
Ga.	–	8	–	111	826	–	109	–	38	–	–	37	–
Fla.	–	44	14	334	419	–	223	4	135	1	–	61	104
E.S. CENTRAL	–	12	–	5	333	3	218	–	95	–	1	38	88
Ky.	–	–	–	1	57	–	61	–	46	–	1	24	43
Tenn.	–	–	–	2	170	2	65	–	24	–	–	13	40
Ala.	–	10	–	2	22	1	67	–	19	–	–	1	3
Miss.	–	2	–	–	84	–	25	–	6	–	–	–	2
W.S. CENTRAL	–	97	–	894	972	8	483	4	228	1	–	181	142
Ark.	–	4	–	24	16	2	30	1	8	–	–	7	4
La.	–	10	–	4	12	–	110	–	5	–	–	9	13
Okla.	–	9	–	7	775	3	47	–	–	–	–	2	6
Tex.	–	74	–	859	169	3	296	3	215	1	–	163	119
MOUNTAIN	–	42	–	37	487	2	126	3	142	–	–	94	165
Mont.	–	1	–	–	2	–	9	–	14	–	–	4	45
Idaho	–	4	–	1	–	–	6	1	7	–	–	4	27
Wyo.	–	–	–	1	–	–	4	–	3	–	–	12	1
Colo.	–	20	–	10	24	–	45	–	47	–	–	27	12
N. Mex.	–	3	–	8	12	–	7	–	–	–	–	5	5
Ariz.	U	7	U	7	392	U	21	U	35	U	U	21	41
Utah	–	4	–	–	47	1	6	–	20	–	–	9	28
Nev.	–	3	–	10	10	1	28	2	16	–	–	12	6
PACIFIC	2	601	1	382	1,135	7	390	17	700	4	9	640	967
Wash.	–	25	–	3	177	3	70	1	161	3	–	93	86
Oreg.	2	19	–	5	1	–	57	–	65	–	–	51	65
Calif.	–	545	1	367	945	4	246	14	427	1	9	484	800
Alaska	–	3	–	–	6	–	13	1	18	–	–	1	12
Hawaii	–	9	–	7	6	–	4	1	25	–	–	11	4
Guam	U	2	U	5	6	U	–	U	8	U	U	1	2
P.R.	–	11	4	294	167	–	13	1	150	–	–	5	25
V.I.	–	4	–	25	6	–	1	–	18	–	–	1	–
Pac. Trust Terr.	U	–	U	1	12	U	–	U	15	U	U	1	1

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending November 28, 1981 and November 22, 1980 (47th week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES, Animal
	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	27,933	24,651	491	24,661	241	1	529	2	1,155	6,555
NEW ENGLAND	535	475	7	715	5	-	16	-	9	39
Maine	5	6	-	49	-	-	1	-	-	13
N.H.	13	6	-	19	-	-	-	-	-	7
Vt.	17	6	-	24	1	-	-	-	-	-
Mass.	338	287	4	421	3	-	8	-	5	11
R.I.	32	31	1	51	-	-	-	-	2	2
Conn.	130	139	2	151	1	-	7	-	2	6
MID. ATLANTIC	3,989	3,379	87	3,826	10	-	79	-	41	110
Upstate N.Y.	370	280	12	635	10	-	13	-	14	75
N.Y. City	2,381	2,198	34	1,453	-	-	44	-	3	-
N.J.	570	401	21	821	-	-	13	-	11	23
Pa.	668	500	20	917	-	-	9	-	13	12
E.N. CENTRAL	2,129	2,540	96	3,384	6	1	39	-	52	991
Ohio	289	344	15	601	-	1	11	-	39	66
Ind.	274	181	2	370	4	-	3	-	6	86
Ill.	1,153	1,560	64	1,401	-	-	15	-	6	527
Mich.	333	364	15	841	1	-	8	-	1	16
Wis.	80	91	-	171	1	-	2	-	-	296
W.N. CENTRAL	610	325	9	839	34	-	19	-	54	2,528
Minn.	178	107	6	145	-	-	2	-	2	446
Iowa	24	23	-	80	-	-	3	-	7	825
Mo.	352	149	3	387	28	-	9	-	30	230
N. Dak.	11	4	-	30	-	-	-	-	-	346
S. Dak.	2	5	-	59	1	-	1	-	-	295
Nebr.	10	12	-	26	3	-	2	-	3	192
Kans.	33	25	-	112	2	-	2	-	12	194
S. ATLANTIC	7,453	5,926	96	5,230	13	-	61	2	655	597
Del.	13	19	-	55	1	-	-	-	3	1
Md.	529	406	9	539	-	-	14	-	60	46
D.C.	599	442	5	302	-	-	2	-	1	-
Va.	648	532	13	539	3	-	1	1	106	140
W. Va.	25	16	4	175	-	-	6	-	6	35
N.C.	594	437	16	907	2	-	5	1	293	19
S.C.	511	349	7	497	3	-	1	-	102	47
Ga.	1,811	1,689	20	858	4	-	4	-	74	212
Fla.	2,723	2,036	22	1,358	-	-	28	-	10	97
E.S. CENTRAL	1,820	2,018	35	2,194	10	-	11	-	133	450
Ky.	89	120	8	548	3	-	1	-	2	121
Tenn.	647	858	12	726	7	-	3	-	82	216
Ala.	543	443	10	591	-	-	5	-	22	109
Miss.	541	597	5	329	-	-	2	-	27	4
W.S. CENTRAL	6,733	4,958	54	2,806	114	-	134	-	175	1,033
Ark.	148	203	6	314	53	-	7	-	35	146
La.	1,534	1,249	7	493	5	-	2	-	1	33
Okla.	159	101	12	302	36	-	4	-	100	206
Tex.	4,892	3,405	29	1,697	20	-	121	-	39	648
MOUNTAIN	690	579	4	670	38	-	24	-	28	244
Mont.	11	3	-	32	6	-	4	-	12	115
Idaho	18	16	-	10	4	-	-	-	5	7
Wyo.	17	12	1	12	1	-	-	-	5	17
Colo.	204	163	3	86	9	-	9	-	1	35
N. Mex.	125	99	-	130	3	-	-	-	-	27
Ariz.	167	190	U	305	1	U	10	U	-	26
Utah	27	13	-	53	13	-	1	-	2	11
Nev.	121	83	-	42	1	-	-	-	3	6
PACIFIC	3,974	4,451	103	4,997	11	-	146	-	8	563
Wash.	158	227	8	346	1	-	4	-	1	15
Oreg.	110	103	2	170	1	-	4	-	-	10
Calif.	3,625	3,975	90	4,242	9	-	134	-	7	507
Alaska	12	8	-	61	-	-	-	-	-	31
Hawaii	69	138	3	178	-	-	4	-	-	-
Guam	-	5	U	33	-	U	-	U	-	-
P.R.	577	554	-	470	-	-	4	-	-	79
V.I.	18	10	-	1	-	-	6	-	-	-
Pac. Trust Terr.	-	-	U	49	-	U	-	U	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending November 28, 1981 (47th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	547	394	97	34	7	14	42
Boston, Mass.	152	100	31	14	2	5	16
Bridgeport, Conn. §	47	45	–	–	1	–	4
Cambridge, Mass.	19	17	1	1	–	–	3
Fall River, Mass.	19	16	1	1	–	1	1
Hartford, Conn.	47	34	6	3	1	3	1
Lowell, Mass.	19	12	4	2	–	1	1
Lynn, Mass.	17	11	6	–	–	–	–
New Bedford, Mass.	25	18	5	1	1	–	5
New Haven, Conn.	36	23	8	2	1	2	–
Providence, R.I.	45	32	11	2	–	–	3
Somerville, Mass.	7	6	1	–	–	–	1
Springfield, Mass.	43	29	11	2	1	–	2
Waterbury, Conn.	29	18	8	3	–	–	3
Worcester, Mass.	42	33	4	3	–	2	2
MID. ATLANTIC	2,118	1,334	533	138	56	57	72
Albany, N.Y.	46	32	9	2	1	2	1
Allentown, Pa.	23	17	6	–	–	–	1
Buffalo, N.Y.	100	55	33	3	3	6	5
Camden, N.J.	38	23	9	4	1	1	1
Elizabeth, N.J.	23	17	5	1	–	–	–
Erie, Pa.†	52	34	10	1	5	2	2
Jersey City, N.J.	35	24	9	2	–	–	–
N.Y. City, N.Y.	1,118	690	274	90	35	29	32
Newark, N.J.	34	14	13	2	2	3	2
Paterson, N.J.	22	16	3	2	–	1	1
Philadelphia, Pa.†	173	102	52	12	5	2	6
Pittsburgh, Pa.†	103	63	34	5	–	1	7
Reading, Pa.	30	23	6	1	–	–	1
Rochester, N.Y.	120	91	22	3	–	4	4
Schenectady, N.Y.	35	25	8	2	–	–	3
Scranton, Pa.†	24	19	5	–	–	–	1
Syracuse, N.Y.	69	41	16	4	3	5	1
Trenton, N.J.	21	15	5	1	–	–	–
Utica, N.Y.	17	11	5	1	–	–	1
Yonkers, N.Y.	35	22	9	2	1	1	3
E.N. CENTRAL	1,908	1,212	427	135	62	72	47
Akron, Ohio	28	18	6	–	1	3	–
Canton, Ohio	27	14	11	–	2	–	–
Chicago, Ill.	456	275	101	48	12	20	11
Cincinnati, Ohio	120	76	28	8	4	4	6
Cleveland, Ohio	170	99	41	18	3	9	2
Columbus, Ohio	137	94	21	4	11	7	3
Dayton, Ohio	79	45	25	6	1	2	2
Detroit, Mich.	195	113	53	21	4	4	5
Evansville, Ind.	46	34	8	–	3	1	–
Fort Wayne, Ind.	54	37	11	–	5	1	1
Gary, Ind.	17	6	8	2	–	1	–
Grand Rapids, Mich.	29	21	4	2	–	2	1
Indianapolis, Ind.	118	78	31	3	3	3	2
Madison, Wis.	41	24	7	3	1	6	4
Milwaukee, Wis.	92	67	15	2	5	3	1
Peoria, Ill.	27	16	5	4	–	2	–
Rockford, Ill.	35	26	5	2	1	1	1
South Bend, Ind.	32	26	3	1	2	–	1
Toledo, Ohio	118	86	17	8	4	3	4
Youngstown, Ohio	87	57	27	3	–	–	3
W.N. CENTRAL	585	404	123	28	10	20	23
Des Moines, Iowa	34	28	2	2	1	1	1
Duluth, Minn.	28	18	8	2	–	–	–
Kansas City, Kans.	13	11	–	–	1	1	2
Kansas City, Mo.	108	84	17	3	2	2	5
Lincoln, Nebr.	26	24	1	1	–	–	–
Minneapolis, Minn.	65	40	17	6	1	1	3
Omaha, Nebr.	95	62	22	6	2	3	2
St. Louis, Mo.	131	83	34	6	1	7	8
St. Paul, Minn.	51	37	9	1	1	3	–
Wichita, Kans.	34	17	13	1	1	2	2

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	973	589	252	64	32	36	30
Atlanta, Ga.	133	81	34	7	4	7	3
Baltimore, Md.	209	114	58	17	9	11	5
Charlotte, N.C.	43	26	13	2	2	–	3
Jacksonville, Fla.	56	37	15	4	–	–	1
Miami, Fla.	63	43	12	3	2	3	4
Norfolk, Va.	53	32	10	4	1	6	–
Richmond, Va.	80	49	17	7	3	4	6
Savannah, Ga.	33	20	11	–	2	–	3
St. Petersburg, Fla.	66	55	8	3	–	–	3
Tampa, Fla.	38	26	7	1	4	–	–
Washington, D.C.	168	87	62	12	4	3	2
Wilmington, Del.	31	19	5	4	1	2	–
E.S. CENTRAL	569	336	142	37	26	28	22
Birmingham, Ala.	132	75	35	6	6	10	2
Chattanooga, Tenn.	44	32	9	–	2	1	1
Knoxville, Tenn.	34	23	10	–	1	–	1
Louisville, Ky.	88	49	25	11	–	3	7
Memphis, Tenn.	106	51	26	11	6	12	5
Mobile, Ala.	46	30	7	4	4	1	3
Montgomery, Ala.	33	20	10	1	2	–	1
Nashville, Tenn.	86	56	20	4	5	1	2
W.S. CENTRAL	1,053	602	288	80	54	29	28
Austin, Tex.	53	31	12	5	1	4	2
Baton Rouge, La.	26	11	9	4	2	–	–
Corpus Christi, Tex.	41	24	9	1	1	6	2
Dallas, Tex.	168	95	45	16	10	2	2
El Paso, Tex.	18	14	1	1	2	–	–
Fort Worth, Tex.	75	51	17	2	2	3	6
Houston, Tex.	373	191	122	35	21	4	9
Little Rock, Ark.	49	32	14	1	2	–	–
New Orleans, La.	63	39	12	3	7	2	–
San Antonio, Tex.	105	59	30	8	3	5	5
Shreveport, La.	22	13	7	–	–	2	–
Tulsa, Okla.	60	42	10	4	3	1	2
MOUNTAIN	532	317	120	48	26	21	25
Albuquerque, N.Mex.	45	8	14	12	8	3	1
Colo. Springs, Colo.	30	21	2	5	–	2	2
Denver, Colo.	119	72	34	10	2	1	5
Las Vegas, Nev.	48	34	8	3	3	–	5
Ogden, Utah	26	19	–	3	2	2	3
Phoenix, Ariz.	122	67	36	6	5	8	2
Pueblo, Colo.	28	22	3	2	1	–	1
Salt Lake City, Utah	51	31	11	2	3	4	1
Tucson, Ariz.	63	43	12	5	2	1	5
PACIFIC	1,407	897	312	95	57	46	52
Berkeley, Calif.	19	14	5	–	–	–	–
Fresno, Calif.	41	29	5	2	2	3	3
Glendale, Calif.	14	11	3	–	–	–	–
Honolulu, Hawaii	40	24	9	3	4	–	4
Long Beach, Calif.	84	58	21	3	1	1	–
Los Angeles, Calif.	384	242	80	35	15	12	8
Oakland, Calif.	77	49	15	6	2	5	2
Pasadena, Calif.	20	13	5	1	1	–	2
Portland, Oreg.	120	78	32	5	1	4	1
Sacramento, Calif.	68	41	23	2	2	–	5
San Diego, Calif.	44	27	10	4	1	2	4
San Francisco, Calif.	138	84	26	16	6	6	5
San Jose, Calif.	144	90	33	9	9	3	10
Seattle, Wash.	138	89	27	6	10	6	4
Spokane, Wash.	42	25	10	1	2	4	1
Tacoma, Wash.	34	23	8	2	1	–	3
TOTAL	9,692††	6,085	2,294	659	330	323	341

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past 4 weeks.

Nocturnal Deaths — Continued

mine whether the apparently lower rates of sudden death for Kampucheans and Vietnamese reflect real differences or are due to reporting artifact such as that created by enhanced surveillance and media attention focused on the Hmong and other Laotians.

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Epidemiologic Notes and Reports

Cholera on a Gulf Coast Oil Rig — Texas

Toxigenic *Vibrio cholerae* O-group 1, biotype El Tor, serotype Inaba, has been isolated in Louisiana from the stool of a 23-year-old man who had diarrheal illness. He became ill on September 20, 1981, 5 days after he began a 7-day tour on an oil rig in the Intracoastal Waterway in Jefferson County, south of Port Arthur, Texas. He had severe watery diarrhea, accompanied by nausea, vomiting, abdominal cramps, and faintness on standing before he finally consulted a physician on September 28 and had a stool specimen taken for culture.

Because the oil rig was owned and operated by a Louisiana firm and employed mainly Louisiana residents, a cooperative investigation was undertaken by the Texas and Louisiana state health departments. Also, 3 oil-rig employees who lived either in Mississippi or Alabama with their families were investigated by their state and local health departments. Interviews with permanent rig employees revealed that 10 of the 13 other individuals present on the rig the week of the patient's tour had experienced diarrheal illness, often severe, beginning on September 22 or 23. In addition, 8 of 43 service personnel who visited the rig for various periods of time during the latter half of September stated that they had diarrhea during that time. None of the 16 individuals resident on the rig the week preceding or following the one when the index patient became ill developed diarrhea. Although none of the rectal swab cultures obtained in early and mid October from all workers except the initial patient have yielded *V. cholerae*, 16 additional *V. cholerae* O1 infections (1 asymptomatic) have been identified by assays for vibriocidal and antitoxic antibodies in serum specimens from these workers. None of the cultures of Moore swabs (*1*) placed in the sewage tank, drinking-water reservoir, and canal water surrounding the rig 2 weeks after the outbreak have yielded *V. cholerae* O1.

The source of infection for the index case is unknown. The investigation has established that for an undetermined period on September 20-21, an inadvertent cross-contamination occurred between the rig's canal-water system used for drilling and the system for unchlorinated fresh water used for drinking. A raw-sewage discharge pipe was close to the intake port for the drill-water system, and it appears likely that drinking water was contaminated with drilling water and sewage containing *V. cholerae* O1 shed by the index patient. Drinking water as well as beverages and food prepared using this water may have served as vehicles of transmission for the *V. cholerae* that caused the September 22-23 outbreak. Presence on the rig on September 21 was highly associated with later having diarrhea ($p < 0.001$).

Cholera -- Continued

Stool cultures and serum specimens from family members of the workers with cholera have not yielded any evidence of *V. cholerae* infection.

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Editorial Note: The 17 *V. cholerae* O1 infections reported on here represent the largest outbreak of cholera in the United States in the 20th century. No cases known to have been acquired in this country (other than a few laboratory-acquired cases) were identified between 1911 and 1973, when a single case was found in Port Lavaca, Texas (*2*). Eleven infections caused by eating inadequately cooked crabs were found in Louisiana in 1978 (*3*). Two more cases were identified in May and June of 1981 in Texas near the area where the current outbreak occurred (*4*). The strains from all of these cases have been essentially identical. Thus, toxigenic *V. cholerae* O1 may have persisted for 8 years along the Gulf Coast.

All but 5 of the 31 infections with toxigenic *V. cholerae* O1 that have occurred since 1973 were discovered through public health investigations and surveillance systems, and would probably have escaped identification without such specific efforts. Although epidemics of cholera are not likely to occur in the United States because of high standards of sanitation and hygiene, occasional sporadic cases, without further transmission, can be expected. In addition, outbreaks such as this one may result when breaks in food or water sanitation occur.

Health officials and physicians should be alert to the possible occurrence of cholera in the United States, and particularly in Gulf Coast states. Stools from persons who may have cholera should be cultured on thiosulfate citrate bile salts sucrose (TCBS) agar. Sewage surveillance using Moore swabs can be helpful in determining whether otherwise undetected infections are occurring (*1*).

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Occupational Dermatitis Associated with Grain Itch Mites — Texas

On June 5, 1981, a 32-year-old resident of Austin, Texas, sought medical attention for a pruritic rash consisting of thin-walled central vesicles and erythematous areolas on her torso and extremities. The lesions, originally diagnosed as chickenpox, increased in number and spread to her face by June 16. At that time, the patient also complained of chills, anorexia, diarrhea, and malaise; her temperature was 100 F (37.8 C). Skin scrapings were negative for *Sarcoptes scabiei* and giant virus cells. A skin biopsy of a fresh lesion obtained on June 18 was interpreted as showing acute and chronic dermatitis with intradermal vesicles.

A tentative diagnosis of rickettsialpox was made, and coincident with some improvement

Grain Itch Mites – Continued

in her clinical condition, the patient was given tetracycline, 250 mg 4 times/day, orally for 7 days. Serum specimens obtained from the patient 3, 4, and 8 weeks after onset of symptoms showed a static indirect fluorescent antibody IgG titer of 64 to Rocky Mountain spotted fever (RMSF) antigen. The 3- and 4-week specimens were nonreactive to rickettsialpox (*Rickettsia akari*) when tested at the National Institutes of Health Rocky Mountain Laboratories in Hamilton, Montana.

The patient managed a store specializing in goods imported from several parts of the world. Her 2 children and 2 of her store employees had skin lesions similar to hers but had no symptoms (the children's rash had resolved to hypopigmented macules by June 26). The patient's husband, who never entered the store, had no skin lesions. The local health officer and the Texas Department of Health were notified.

The store, located in a shopping-mall complex in Austin, carried a variety of dried flowers and grains sold for decorative purposes; straw baskets, mats, and brooms; and unfinished wood products. Onset of skin lesions had coincided with arrival of a shipment of new decorative merchandise, including so-called Black Beard Wheat (*Triticum*, species unknown), a dried stalk of the grain. Microscopy of this product and other selected products revealed many grain itch mites, *Pyemotes* (*Pediculoides*) *ventricosus*, and a few larval ticks in the Black Beard Wheat only. Mites obtained from the wheat were negative in tests for RMSF-group organisms, including tests in which meadow voles (*Microtus pennsylvanicus*) were inoculated with material from the mites.

During the site visit, an investigator held a cellophane-wrapped packet of Black Beard Wheat in his hand for about 5 minutes. Within 1-1/2 hours, pruritic welts appeared on his forearm, and over the next 15 hours additional welts appeared on his abdominal area, his deltoid region, and the back of his neck. The central vesicles ruptured in 1-2 days, evolved into granulomatous lesions, and healed in 7-10 days. Residual areas of hypopigmentation were still present after 6 weeks.

The Black Beard Wheat had been imported from Spain in a single shipment 3 years earlier and had been fumigated and stored in a warehouse in Los Angeles. Before being informed of this mite infestation, the import chain that distributed and marketed Black Beard Wheat had already contacted the California Department of Agriculture because of complaints about some of its products. Of 92 stores in the import chain, 82 eventually reported bites or skin lesions among their employees. The California State Health Department, the Texas Department of Agriculture, and the United States Department of Agriculture were also notified. The import chain advised all 92 stores to remove Black Beard Wheat and other potentially contaminated products from their stocks. Several stores were fumigated, and the infestation appears to have been eliminated.

Reported by DA Baggett, MD, BL Davis, RS, LB Elliott, DrPH, PV Fournier, RPE, SJ Lerro, MD, JA Rawlings,

The Morbidity and Mortality Weekly Report, circulation 98,000, is published by the Centers for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs 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. Send reports to: Attn: Editor, Morbidity and Mortality Weekly Report, Centers for Disease Control, Atlanta, Georgia 30333.

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Grain Itch Mites – Continued

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Editorial Note: *P. ventricosus* dermatitis is characterized by violent itching and a rash resembling chickenpox distributed primarily on the torso; some patients also have fever, malaise, and loss of appetite. The causative agent was first isolated from straw mattresses in 1909 during an investigation by a Public Health Service Officer (*1,2*). The mites are small (0.16-0.22 mm) and are barely visible to the unaided eye as white specks. They are primarily parasites of certain insects—particularly those found in stored grain—but the mites will readily attack humans and other mammals when their preferred hosts are unavailable. Human infestation results from contact with contaminated materials such as straw, grain, hay, grass, or wood.

P. ventricosus is endemic in the United States. An outbreak of dermatitis in a Texas grocery chain in 1962 was linked to *P. ventricosus* that had infested some puffed wheat (*3*). Another outbreak of dermatitis in Texas in 1979 affected school children and was associated with homemade fish food prepared from oatmeal that was infested with *P. ventricosus* (*4*).

It is not known how frequently dermatitis caused by *P. ventricosus* occurs in the United States. When identified, the mites can be eliminated from infested products with pyrethrin-based insect foggers available at most supermarkets or with other fumigation measures. Another solution to the problem is to destroy the infested products.

Physicians whose patients have a varicelliform or chigger bite-like dermatitis but do not have a specific history of outdoor exposure should consider the possibility of *P. ventricosus* infestation of products brought into homes or places of employment. Because *P. ventricosus* mites do not burrow into the skin, but remain on the surface, ectoparasiticides, such as lindane, should be effective in eliminating them.

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HHS Publication No. (CDC) 81-8017