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Epidemiologic Notes and Reports

Eosinophilia-Myalgia Syndrome and L-Tryptophan–Containing Products – New Mexico, Minnesota, Oregon, and New York, 1989

As of November 21, 360 cases of eosinophilia-myalgia syndrome (EMS) had been reported by state health departments to CDC. Studies examining an association of L-tryptophan–containing products (LTCPs) with the EMS epidemic (*1*) have been completed in New Mexico, Minnesota, and Oregon. In addition, a fatal case in New York has been reported.

New Mexico. In a New Mexico case-control study, EMS cases (N = 12) were all persons for whom an eosinophil count of ≥2000 cells/mm^3 was recorded from May 1 through November 11, 1989, in nine laboratories in Albuquerque, Santa Fe, and Los Alamos and for whom incapacitating myalgia was documented, either in the medical record or by interview with the patient. Potential cases were excluded if eosinophilia could have been caused by any of a predetermined list of approximately 20 infectious, neoplastic, allergic, or other chronic diseases. EMS cases were compared with controls (two per case) who had been matched with case-patients by age (±5 years), sex, and neighborhood of residence. Comparisons were made for factors such as the use of different vitamins, other health foods or raw food products, medications, and different water sources. All case-patients and two (8%) controls used LTCPs (odds ratio [OR] not calculable) ($\chi^2 = 20$; $p = 6.9 \times 10^{-6}$). There were no statistically significant differences between cases and controls on 32 other potential risk factors studied.

Minnesota. In Minnesota, potential cases for an initial case-control study of risk factors for EMS were identified by rheumatologists (who were asked by the Minnesota Department of Health to report patients recently diagnosed with eosinophilia and either severe myalgia or muscle weakness) and by clinical pathologists and a pediatric neurologist (who were asked to identify patients with muscle biopsies showing eosinophilic perimyositis or perivasculitis). Criteria necessary for these patients to be considered as cases were eosinophil count of >1000 cells/mm^3, myalgia or muscle weakness of severity sufficient to affect normal daily activities, and

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a muscle biopsy (if done) showing perimyositis, perivasculitis, or unspecified fasciitis. As in the New Mexico study, potential cases were excluded if EMS could have been caused by any of a predetermined list of diseases known to be associated with eosinophilia. Investigators had no prior knowledge of patients' use of LTCPs. Twelve cases were identified and compared with controls (one per case) matched by age, sex, and telephone exchange. All case-patients and no controls used LTCPs (OR not calculable) ($p = 8 \times 10^{-4}$) during the month before onset of illness for case-patients and during a similar time period for matched controls. Nine (75%) case-patients and four (33%) controls were taking some type of prescription medication (not statistically significant after adjustment for use of LTCPs). Illness was not associated with consumption of vitamins and health-food products, wild game, undercooked meat or fish products, or nonprescription medications.

A follow-up study compared 30 EMS cases fitting the CDC surveillance case definition of EMS (*1*) with 36 asymptomatic users of LTCPs who responded to a public request and contacted the Minnesota Department of Health. Twenty (67%) case-patients reported using brands of LTCPs from one particular tablet manufacturer, compared with eight (22%) asymptomatic users (OR = 7.0; 95% confidence interval [CI] = 1.5–24.6 [$p < 0.0002$]). Asymptomatic LTCP users were similar to case-patients for age, sex, and geographic areas of residence; additional population-based studies of LTCP use continue in Minnesota.

Oregon. The Oregon Health Division studied 29 EMS patients who conformed with the CDC case definition. All had eosinophilia and myalgia; four also reported respiratory signs or symptoms. These patients, all users of LTCPs, were compared with users of LTCPs identified by a random telephone survey of Oregon residents (control group A; N = 32) and asymptomatic LT users who contacted the Oregon Health Division (control group B; N = 24). Fourteen (48%) case-patients were exposed to LTCPs from a single lot of 4500 bottles, compared with two (6%) persons in control group A and two (8%) persons in control group B (ORs = 14.0 [95% CI = 2.5–103.0] and 10.3 [95% CI = 1.8–76.8], respectively) who were so exposed. This association remains statistically significant when controlled for age, sex, or average daily LTCP consumption.

New York. In New York, a 58-year-old woman with EMS died September 17, 1989. The patient, who had become ill in July 1989 with myalgia, fatigue, and marked progressive weakness, had been taking 5–6 g of LT daily. She had leukocytosis (19,800 cells/mm^3) with 18% eosinophils. Electron myelographic and nerve conduction studies were most consistent with axonal neuropathy. Studies considered to be within normal limits included: cerebrospinal fluid glucose, protein, and cell counts and celiac and renal arteriograms. Serologic tests for a variety of autoimmune diseases were negative. The patient developed an ascending polyneuropathy with near-total quadriplegia and a bifacial hemiparesis. She failed to improve on corticosteroid and cyclophosphamide treatment and died following cardiorespiratory arrest.

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Editorial Note: The case-control studies in New Mexico and Minnesota establish a statistically significant association between use of LTCPs and development of EMS. The strength of this association, the temporal relationship, the absence of apparent selection or data-ascertainment biases, and the failure of different potential confounders to account for this association support the potential causal relationship. In addition, of the 85 case-patients who initially called CDC before the full implementation of the state-based reporting system and for whom information on LTCP use was available, only one (1%) did not use LTCPs. However, the biologic mechanism for the development of EMS among LTCP users is unclear.

The report of an EMS-associated death in New York emphasizes the potential severity of this condition, and confirmatory data are being sought on other possible EMS-associated deaths. In the fatal case, the severe Guillain-Barré syndrome-like ascending polyneuropathy resembles clinical manifestations in patients with the intermediate and chronic phases of toxic-oil syndrome (TOS), a disease similar to EMS that was epidemic in Spain in 1981 (*2–5*). Frank vasculitis has been reported in some EMS cases. Physicians caring for patients with EMS should be alert to the possibility that such patients may develop clinical manifestations similar to those of chronic TOS, including peripheral neuropathy (mononeuritis multiplex), thromboembolic phenomena, sclerodermiform skin changes, joint contractures, and pulmonary hypertension (*2–5*). Case reports received at CDC suggest that, as with TOS, the clinical manifestations of EMS may not regress immediately on removal of LTCPs.

The findings of the lot and brand-name studies in Minnesota and Oregon suggest multiple interpretations: some LTCPs could contain a contaminant that is causally associated with EMS; or host factors mediating the response to LT may be unique to patients who use a particular brand or set of brands associated with illness. Studies under way include identifying possible chemical or microbial contaminants in LTCPs, tracing the sources of individual brands and lots, identifying host factors related to clinical manifestations, and determining factors associated with use and purchase of LTCPs.

On November 17, the Food and Drug Administration (FDA) announced its intention to seek a nationwide recall of all LTCPs in which LT is the sole or major component; this reinforced a November 11 alert to the public to refrain from using LTCPs. FDA is attempting to trace suspect lots of LTCPs and is evaluating production procedures at the companies in Japan where LT is produced for eventual sale and consumption in the United States.

CDC's initial surveillance case definition for EMS required specific serologic testing or muscle biopsy to rule out trichinosis (*1*). It now appears the clinical presentation of some EMS patients may be sufficiently distinct from that of trichinosis patients that such specific laboratory tests are not warranted. Accordingly, the CDC surveillance definition of EMS no longer requires specific laboratory testing for trichinella. CDC now recommends defining EMS as an illness characterized by 1) eosinophil count of $\geq$1000 cells per mm^3, 2) generalized myalgia (at some point during the course of illness) of severity sufficient to affect a patient's ability to pursue his or her usual daily activities, and 3) absence of any infection or neoplasm that could account for 1 or 2 above. This change has been communicated to state health departments.

Eosinophilia-Myalgia Syndrome — Continued

Epidemiologic investigations and research studies of EMS should be directed toward further defining a causal association between LTCPs and EMS and identifying specific etiologic factors and possible cofactors that may modify risk. Additional questions relate to the existence of a possible dose-response effect, the latent period between exposure and disease, establishment of the beginning of the epidemic, determination of the full spectrum of clinical manifestations, elucidation of pathogenetic mechanisms, and determination of prognosis and the response to specific therapies.

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Current Trends

Comorbidity of Chronic Conditions and Disability among Older Persons — United States, 1984

Although the coexistence of chronic conditions (i.e., comorbidity) is considered common in the older population, there has been little systematic evaluation of the prevalence, patterns, and impact of comorbidity in representative populations (*1*). Data from the Supplement on Aging (SOA) to the 1984 National Health Interview Survey were analyzed to evaluate the prevalence and impact of comorbidity.

The National Health Interview Survey, conducted by CDC's National Center for Health Statistics, is a continuing survey of the civilian noninstitutionalized population of the United States. In 1984, all respondents aged ≥65 years and a 50% sample of those aged 55–64 years were asked to also respond to questions on the SOA. The SOA was designed to collect information about chronic conditions, physical limitations, and other health-related and social information about middle-aged and older persons (*2*). In total, 16,148 interviews were conducted. This report presents results for the 13,807 persons aged ≥60 years, representing an estimated U.S. population of 37,256,000 in this age group in 1984.

Emphasis was placed on nine common chronic conditions in the population aged ≥60 years, including: arthritis, present in 49.0%; hypertension, 41.8%; cataracts,*

*Includes persons reporting they currently had a cataract, had had surgery for a cataract, or had had a lens implant for a cataract.

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19.9%; heart disease,[†] 14.0%; varicose veins, 9.9%; diabetes, 9.5%; cancer (except nonmelanoma skin cancer), 6.6%; osteoporosis/hip fracture, 5.5%; and stroke, 5.4%.

The proportion of the population ≥60 years of age with two or more of the nine chronic conditions increased with age and, for each age group, was higher for women than for men (Table 1). For persons aged ≥80 years, 70% of women and 53% of men had two or more of the nine conditions.

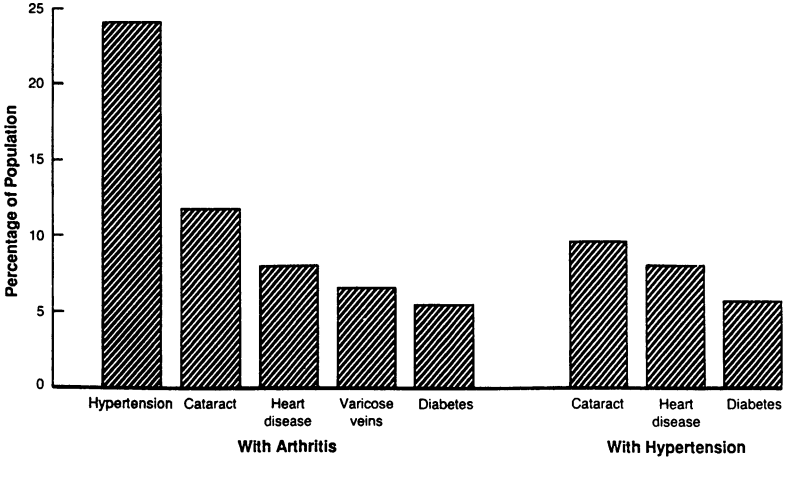
Prevalence of comorbidity is directly related to the prevalence of each of the individual conditions. Hypertension and arthritis, the two conditions with the highest prevalence, co-occurred in 24.1% of persons ≥60 years of age; cataract and arthritis were both reported by 11.7% (Figure 1). The remaining six pairs of the most common comorbid conditions had coprevalences that ranged from 5.5% to 9.6%.

[†]Includes persons who reported they had ever had coronary heart disease, angina pectoris, myocardial infarction, or any other "heart attack."

TABLE 1. Percentage of population ≥60 years of age reporting number of chronic conditions, by sex and age — United States, 1984

	No. chronic conditions		
Sex/Age (yrs)	**0**	**1**	**≥2**
Men			
60–69	30%	35%	35%
70–79	22%	31%	47%
≥80	19%	28%	53%
Women			
60–69	23%	32%	45%
70–79	14%	25%	61%
≥80	10%	20%	70%

FIGURE 1. Prevalence of the most common comorbid conditions among persons ≥60 years of age — United States, 1984



Chronic Conditions and Disability — Continued

If the prevalences of two conditions are assumed to be independent, their expected coprevalence is the product of their individual prevalence rates. However, for each of the eight most common pairs of conditions, the observed comorbidity exceeded the expected (Table 2). Except for the comorbidity of cataract with hypertension in men, each of these increases was statistically significant ($p<0.001$, adjusted for the complex sampling design).

Respondents were asked if they received assistance with six activities of daily living: getting in and out of bed or chair, walking, using the toilet, bathing or showering, dressing, and eating. The percentage of men and women receiving assistance with one or more of these activities increased directly with the number of chronic conditions (Table 3).

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Editorial Note: Analysis of the 1984 SOA data indicates that the prevalence of comorbidity of chronic conditions in the noninstitutionalized older population is substantial. Comorbidity prevalence rates for the nine chronic conditions are highest for women, increasing from 45% in persons aged 60–69 years to 70% in persons aged ≥80 years.

For the most commonly reported pairs of conditions, the observed coprevalence is consistently higher than predicted by their independent distributions. The explanation may be apparent for two of these pairs: coronary heart disease and hypertension (a known risk factor for coronary heart disease) and hypertension and diabetes, which share overweight as an underlying risk factor. For the other six pairs of conditions, however, increased rates of coprevalence were not anticipated. Although these are modest increases, their impact may be substantial. For example, the independent

TABLE 2. Percent increase in observed over expected frequency of the most common comorbid conditions among persons ≥60 years of age, by sex — United States, 1984

Conditions	Male	Female
Arthritis with:		
Cataract*	20.9%	15.3%
Diabetes	15.5%	21.0%
Heart disease†	17.3%	20.8%
Hypertension	16.7%	15.1%
Varicose veins	27.4%	29.1%
Hypertension with:		
Cataract*	5.0%	16.6%
Diabetes	47.2%	43.1%
Heart disease†	36.9%	41.5%

*Includes persons reporting they currently had a cataract, had had surgery for a cataract, or had had a lens implant for a cataract.

†Includes persons who reported they had ever had coronary heart disease, angina pectoris, myocardial infarction, or any other "heart attack."

Chronic Conditions and Disability — Continued

distributions of hypertension and arthritis predict that 7.6 million persons aged ≥60 years have both conditions. However, the SOA data indicate that this pair of conditions occurred in approximately 9 million persons—1.4 million more than expected.

At least three factors may contribute to the increase in observed coprevalence for conditions not generally recognized as being associated. First, those persons with one condition may have more contacts with the medical-care system and, therefore, greater likelihood of any second condition being diagnosed. Second, persons who report having one disease may be more likely to report having other diseases. Third, in some persons, genetic, environmental, and behavioral factors may increase general susceptibility to disease, resulting in the occurrence of multiple diseases in the later years of life.

The SOA data also suggest an association between the number of conditions present and the proportion of persons with disability (as assessed by ability to perform activities of daily living). This association was present even though the conditions were not weighted for severity; in addition, the potential impact of these conditions on disability varied considerably (e.g., stroke has a greater potential impact than varicose veins). Despite these important limitations, the number of conditions present may represent a useful measure of the burden of illness on older persons, as reflected by associated disability. Because functional limitations increase with age and number of chronic conditions, comprehensive public health strategies should include disability prevention as well as health promotion and disease prevention.

References

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TABLE 3. Percentage of persons ≥60 years of age who received assistance in performing one or more activities of daily living,* by sex, age, and number of chronic conditions — United States, 1984

	No. chronic conditions					
Sex/Age (yrs)	**0**	**1**	**2**	**3**	**4**	**≥5**
Men†	2.1%	4.8%	8.6%	13.4%	22.0%	23.0%
60–69	1.3%	2.9%	6.3%	10.7%	19.1%	23.3%
70–79	3.2%	3.4%	7.7%	15.7%	22.2%	28.5%
≥80	2.9%	15.7%	20.2%	17.0%	31.4%	49.8%
Women†	2.3%	5.7%	6.9%	12.7%	15.7%	27.7%
60–69	1.4%	3.9%	4.2%	10.1%	12.0%	21.0%
70–79	2.2%	5.2%	7.6%	11.1%	17.5%	28.5%
≥80	6.5%	14.4%	16.9%	27.4%	37.5%	58.1%

*Getting in and out of bed or chair, walking, using the toilet, bathing or showering, dressing, and eating.

†Age-adjusted to the 1984 U.S. population.

Progress in Chronic Disease Prevention

Chronic Disease Reports: Deaths from Chronic Liver Disease — United States, 1986

In 1986, 26,151 persons died with an underlying diagnosis of chronic liver disease and cirrhosis (chronic liver disease, *International Classification of Diseases, Ninth Revision* [ICD-9], code 571) (Table 1, page 797). Chronic liver disease was a contributing cause in an additional 13,475 deaths (*1*). Among deaths for which chronic liver disease was the underlying cause, 42% were diagnostically associated with alcohol (e.g., alcoholic cirrhosis of the liver and alcoholic liver damage, unspecified) (ICD-9 571.0–571.3); 3%, with chronic hepatitis (ICD-9 571.4); 1%, with biliary cirrhosis (ICD-9 571.6), and 53%, with unspecified conditions and no mention of alcohol (ICD-9 571.5, 571.8, 571.9) (*2*).

(Continued on page 797)

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

Disease	46th Week Ending			Cumulative, 46th Week Ending		
	Nov. 18, 1989	Nov. 19, 1988	Median 1984-1988	Nov. 18, 1989	Nov. 19, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	603	U*	254	30,800	27,232	11,821
Aseptic meningitis	266	163	195	8,812	6,188	9,306
Encephalitis: Primary (arthropod-borne & unspec)	16	18	18	778	737	1,089
Post-infectious	2	2	2	75	111	103
Gonorrhea: Civilian	11,173	13,450	15,920	612,073	617,352	745,193
Military	148	182	357	9,673	10,360	14,943
Hepatitis: Type A	844	711	444	31,040	23,230	20,196
Type B	455	515	511	19,970	19,962	22,841
Non A, Non B	40	52	55	2,057	2,255	3,143
Unspecified	39	72	75	1,991	2,036	3,882
Legionellosis	27	36	18	968	895	721
Leprosy	5	7	5	148	151	200
Malaria	17	21	21	1,113	914	914
Measles: Total†	68	50	17	13,330	2,649	2,664
Indigenous	68	46	16	12,691	2,376	2,376
Imported	-	4	1	639	273	303
Meningococcal infections	42	58	55	2,325	2,510	2,377
Mumps	64	115	108	4,779	4,128	4,128
Pertussis	82	87	41	3,167	2,685	2,685
Rubella (German measles)	-	2	3	388	189	490
Syphilis (Primary & Secondary): Civilian	632	754	511	36,963	33,985	24,698
Military	5	1	2	223	140	145
Toxic Shock syndrome	9	4	6	334	320	320
Tuberculosis	375	459	423	18,760	18,776	18,776
Tularemia	-	7	6	134	177	177
Typhoid Fever	6	18	14	440	358	336
Typhus fever, tick-borne (RMSF)	1	5	7	590	574	668
Rabies, animal	67	108	94	4,094	3,872	4,800

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis (Hawaii 4)	88
Botulism: Foodborne	24	Plague	4
Infant	17	Poliomyelitis, Paralytic	-
Other	4	Psittacosis (Ohio)	87
Brucellosis (Texas 2)	77	Rabies, human	1
Cholera	-	Tetanus	41
Congenital rubella syndrome	2	Trichinosis (Upstate N.Y. 1)	18
Congenital syphilis, ages < 1 year	243		
Diphtheria	3		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending November 18, 1989 and November 19, 1988 (46th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	30,800	8,812	778	75	612,073	617,352	31,040	19,970	2,057	1,991	968	148
NEW ENGLAND	1,289	489	23	2	18,296	19,220	651	968	67	76	62	9
Maine	58	30	5	-	234	352	21	52	6	1	6	-
N.H.	38	53	1	-	159	230	58	54	9	4	2	-
Vt.	13	41	4	-	62	106	36	72	7	-	2	-
Mass.	700	159	7	2	7,168	6,459	196	536	25	54	39	7
R.I.	70	99	-	-	1,309	1,796	50	71	5	10	13	1
Conn.	410	107	6	-	9,364	10,277	290	183	15	7	-	1
MID. ATLANTIC	8,695	1,239	35	6	86,012	97,717	3,742	3,116	190	215	246	21
Upstate N.Y.	1,264	515	29	5	15,000	13,496	870	612	70	12	84	4
N.Y. City	4,368	156	3	1	33,223	42,110	386	1,226	32	172	40	15
N.J.	2,047	-	3	-	13,199	13,817	417	537	28	5	41	1
Pa.	1,016	568	-	-	24,590	28,294	2,069	741	60	26	81	1
E.N. CENTRAL	2,415	1,742	283	9	115,776	105,236	1,855	2,342	236	86	273	4
Ohio	430	578	116	4	30,462	23,629	376	416	38	20	115	-
Ind.	324	243	42	3	8,590	8,002	196	361	27	31	57	1
Ill.	1,084	326	54	2	37,872	31,334	815	598	98	21	17	3
Mich.	466	483	47	-	30,126	33,267	258	594	46	14	42	-
Wis.	111	112	24	-	8,726	9,004	210	373	27	-	42	-
W.N. CENTRAL	759	440	33	4	29,214	26,344	1,292	904	107	27	34	1
Minn.	164	50	4	1	3,330	3,535	149	103	20	4	2	-
Iowa	53	74	13	-	2,464	1,946	146	44	15	5	6	-
Mo.	390	196	3	-	17,754	15,153	668	618	44	12	15	-
N. Dak.	6	12	1	-	121	172	4	22	4	2	1	-
S. Dak.	4	12	4	-	250	440	14	10	9	-	2	-
Nebr.	32	21	5	-	1,385	1,383	88	25	3	2	2	1
Kans.	110	75	3	3	3,910	3,715	223	82	12	2	6	-
S. ATLANTIC	6,310	1,744	156	24	166,130	173,482	3,229	3,873	304	318	124	2
Del.	74	73	1	-	2,916	2,701	76	133	5	8	11	-
Md.	638	215	18	2	19,737	18,040	960	649	26	30	28	-
D.C.	464	24	-	-	9,359	13,132	8	30	2	-	1	-
Va.	377	361	38	3	14,449	12,729	304	270	64	184	9	-
W. Va.	48	92	83	-	1,303	1,217	25	89	10	9	-	-
N.C.	491	205	8	2	25,165	24,535	410	945	81	-	31	1
S.C.	307	35	1	-	15,186	13,799	78	543	3	11	7	-
Ga.	971	126	3	1	32,563	32,741	338	376	12	8	24	-
Fla.	2,940	613	4	16	45,452	54,588	1,030	838	101	68	13	1
E.S. CENTRAL	711	637	48	2	50,723	49,085	373	1,436	145	12	62	-
Ky.	115	204	20	1	4,914	4,943	113	363	48	5	9	-
Tenn.	250	120	5	-	17,096	17,029	143	736	33	-	38	-
Ala.	204	220	20	-	16,405	14,774	78	225	56	3	13	-
Miss.	142	93	3	1	12,308	12,339	39	112	8	4	2	-
W.S. CENTRAL	2,662	868	74	7	64,247	66,278	3,453	1,977	137	470	46	23
Ark.	65	43	8	-	7,442	6,603	241	68	15	10	3	-
La.	438	73	18	1	13,734	13,188	238	326	15	2	8	-
Okla.	170	76	12	4	5,614	6,278	426	180	34	34	26	-
Tex.	1,989	676	36	2	37,457	40,209	2,548	1,403	73	424	9	23
MOUNTAIN	1,022	295	15	4	13,024	13,184	4,538	1,327	190	134	53	3
Mont.	17	6	-	-	168	372	87	42	6	3	3	1
Idaho	22	2	-	1	157	301	156	120	12	4	2	-
Wyo.	16	7	-	-	94	180	54	8	2	-	-	-
Colo.	361	142	3	1	2,760	2,969	457	147	51	55	4	-
N. Mex.	83	12	1	-	1,159	1,307	594	185	31	3	5	1
Ariz.	291	96	5	-	5,252	4,761	2,413	512	49	57	25	1
Utah	66	21	1	2	405	480	451	100	25	5	7	-
Nev.	166	9	5	-	3,029	2,814	326	213	14	7	7	-
PACIFIC	6,937	1,358	111	17	68,651	66,806	11,907	4,027	681	653	68	85
Wash.	463	-	6	1	5,850	6,362	2,811	880	183	58	24	7
Oreg.	217	-	-	-	2,816	2,915	2,108	471	72	14	2	1
Calif.	6,070	1,235	91	16	58,629	56,060	6,204	2,542	412	566	39	64
Alaska	16	33	11	-	891	934	623	58	6	5	1	-
Hawaii	171	90	3	-	465	535	161	76	8	10	2	13
Guam	1	5	1	-	118	136	6	-	-	7	-	1
P.R.	1,266	89	2	1	972	1,145	175	211	17	19	-	8
V.I.	27	-	-	-	555	397	-	8	-	-	-	-
Amer. Samoa	-	-	-	-	44	74	35	-	2	-	-	5
C.N.M.I.	-	-	-	-	72	47	2	10	-	2	-	1

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 18, 1989 and November 19, 1988 (46th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	1,113	68	12,691	-	639	2,649	2,325	64	4,779	82	3,167	2,685	-	388	189
NEW ENGLAND	81	35	338	-	38	115	172	1	78	23	363	302	-	6	9
Maine	-	-	-	-	1	7	16	-	-	-	25	24	-	-	-
N.H.	2	-	8	-	7	88	17	-	15	-	16	47	-	4	5
Vt.	4	-	1	-	2	-	8	-	2	-	6	4	-	1	-
Mass.	44	35	82	-	21	4	97	1	52	23	287	187	-	1	3
R.I.	19	-	38	-	3	-	1	-	-	-	11	17	-	-	1
Conn.	12	-	209	-	4	16	33	-	9	-	18	23	-	-	-
MID. ATLANTIC	208	1	759	-	178	968	353	5	425	6	272	194	-	78	14
Upstate N.Y.	33	-	54	-	98	37	126	5	162	4	113	112	-	63	2
N.Y. City	82	-	105	-	16	52	41	-	19	1	12	6	-	15	7
N.J.	57	-	393	-	6	336	70	-	180	-	32	15	-	-	3
Pa.	36	1	207	-	58	543	116	-	64	1	115	61	-	-	2
E.N. CENTRAL	76	6	4,036	-	102	198	302	9	549	9	397	282	-	26	31
Ohio	11	-	1,516	-	35	34	111	-	146	-	68	49	-	3	1
Ind.	11	6	109	-	-	57	30	3	49	9	40	71	-	-	-
Ill.	32	-	1,849	-	1	72	76	1	173	-	126	53	-	21	26
Mich.	14	-	311	-	23	31	62	5	139	-	43	34	-	1	4
Wis.	8	-	251	-	43	4	23	-	42	-	120	75	-	1	-
W.N. CENTRAL	33	-	727	-	11	17	74	3	404	1	170	124	-	6	2
Minn.	9	-	17	-	-	11	16	-	2	-	46	48	-	-	-
Iowa	4	-	12	-	1	1	2	2	44	-	15	30	-	1	-
Mo.	12	-	458	-	-	5	21	1	65	-	92	23	-	4	-
N. Dak.	2	-	-	-	-	-	-	-	-	-	3	11	-	-	-
S. Dak.	1	-	-	-	-	-	8	-	-	1	3	5	-	-	-
Nebr.	2	-	108	-	2	-	18	-	5	-	7	-	-	-	-
Kans.	3	-	132	-	8	-	9	-	288	-	4	7	-	1	2
S. ATLANTIC	193	2	587	-	75	406	401	21	870	6	334	241	-	10	18
Del.	7	-	42	-	1	-	2	-	1	-	1	7	-	-	-
Md.	36	-	67	-	36	16	70	8	432	1	74	46	-	2	1
D.C.	10	1	37	-	4	-	15	1	128	1	3	1	-	-	-
Va.	39	-	20	-	3	209	47	2	126	-	33	23	-	-	11
W. Va.	2	-	53	-	-	6	13	-	14	-	32	8	-	-	-
N.C.	20	-	187	-	3	5	57	-	37	3	72	65	-	1	1
S.C.	10	-	15	-	-	-	30	-	37	-	-	1	-	-	-
Ga.	12	-	2	-	16	-	68	9	52	1	49	36	-	-	2
Fla.	57	1	164	-	12	170	99	1	43	-	70	54	-	7	3
E.S. CENTRAL	15	-	239	-	4	69	79	1	224	2	133	100	-	5	2
Ky.	1	-	40	-	4	35	42	-	9	-	1	12	-	-	-
Tenn.	5	-	148	-	-	-	9	1	75	-	52	29	-	4	2
Ala.	6	-	50	-	-	-	23	-	29	2	75	55	-	1	-
Miss.	3	-	1	-	-	34	5	N	N	-	5	4	-	-	-
W.S. CENTRAL	65	24	3,254	-	75	17	166	16	1,501	1	364	203	-	50	10
Ark.	-	-	3	-	19	1	13	9	176	-	29	25	-	-	3
La.	2	24	109	-	-	-	38	3	646	-	26	18	-	5	-
Okla.	8	-	126	-	-	8	24	-	197	1	59	62	-	1	1
Tex.	55	-	3,016	-	56	8	91	4	482	-	250	98	-	44	6
MOUNTAIN	26	-	363	-	54	149	67	6	212	15	632	750	-	36	6
Mont.	1	-	12	-	1	33	2	-	4	-	39	2	-	1	-
Idaho	2	-	-	-	8	1	2	-	21	-	64	332	-	32	-
Wyo.	1	-	-	-	-	-	1	-	8	-	-	2	-	2	-
Colo.	6	-	79	-	18	115	21	4	40	10	92	31	-	-	2
N. Mex.	4	-	16	-	15	-	2	N	N	-	30	48	-	-	-
Ariz.	9	-	141	-	4	-	26	-	114	5	385	306	-	-	-
Utah	-	-	114	-	-	-	5	2	18	-	21	28	-	-	3
Nev.	3	-	1	-	8	-	8	-	7	-	1	1	-	1	1
PACIFIC	416	-	2,388	-	102	710	711	2	516	19	502	489	-	171	97
Wash.	32	-	31	-	18	7	77	1	43	2	184	111	-	-	-
Oreg.	20	-	12	-	48	8	51	N	N	-	13	46	-	3	-
Calif.	353	-	2,324	-	24	681	570	-	453	17	279	266	-	146	66
Alaska	3	-	1	-	-	2	11	-	2	-	1	8	-	-	-
Hawaii	8	-	20	-	12	12	2	1	18	-	25	58	-	22	31
Guam	3	U	-	U	-	1	-	U	6	U	1	-	U	-	1
P.R.	1	2	562	-	-	226	7	-	8	-	4	15	-	8	3
V.I.	-	U	4	U	-	-	-	U	17	U	-	-	U	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	2	U	-	-	U	-	-
C.N.M.I.	1	U	-	U	-	-	-	U	6	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 November 18, 1989 and November 19, 1988 (46th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	36,963	33,985	334	18,760	18,776	134	440	590	4,094
NEW ENGLAND	1,513	1,055	19	580	488	2	39	8	9
Maine	13	12	4	25	20	-	-	-	2
N.H.	13	6	2	24	9	-	1	-	2
Vt.	1	3	-	8	4	-	-	-	-
Mass.	448	391	7	324	287	2	25	4	2
R.I.	28	30	2	61	39	-	6	1	-
Conn.	1,010	613	4	138	129	-	7	3	3
MID. ATLANTIC	7,624	6,884	59	3,949	3,824	2	124	63	674
Upstate N.Y.	840	523	12	304	487	1	36	13	55
N.Y. City	3,424	4,264	4	2,263	2,128	-	54	3	-
N.J.	1,233	893	12	780	603	-	26	27	21
Pa.	2,127	1,204	31	602	606	1	8	20	598
E.N. CENTRAL	1,682	1,061	55	1,948	2,083	3	47	59	116
Ohio	150	96	17	329	400	-	10	30	10
Ind.	54	49	8	186	215	1	4	19	2
Ill.	753	475	12	894	909	-	22	7	29
Mich.	584	388	18	425	466	1	6	3	28
Wis.	141	53	-	114	93	1	5	-	47
W.N. CENTRAL	289	213	39	486	464	51	7	76	534
Minn.	51	17	11	97	77	-	2	-	125
Iowa	32	23	6	45	49	-	2	4	110
Mo.	152	138	10	228	228	38	2	54	57
N. Dak.	2	2	-	14	15	-	-	1	55
S. Dak.	1	-	4	26	32	6	-	5	94
Nebr.	23	27	5	21	14	3	-	1	44
Kans.	28	6	3	55	49	4	1	11	49
S. ATLANTIC	12,461	12,650	25	3,960	3,986	6	44	211	1,235
Del.	192	91	2	38	40	-	2	1	29
Md.	753	613	1	347	379	2	9	17	345
D.C.	697	621	1	148	170	-	2	-	2
Va.	516	386	4	319	366	4	7	16	238
W. Va.	15	36	-	69	66	-	-	2	47
N.C.	1,004	726	6	513	448	-	2	109	7
S.C.	754	668	4	448	428	-	2	39	187
Ga.	2,208	2,268	3	652	640	-	6	23	217
Fla.	6,322	7,241	4	1,426	1,449	-	14	4	163
E.S. CENTRAL	2,688	1,750	9	1,410	1,537	7	3	63	331
Ky.	51	58	2	338	335	1	1	14	130
Tenn.	1,167	735	4	426	452	5	1	34	87
Ala.	817	516	2	409	465	-	1	6	110
Miss.	653	441	1	237	285	1	-	9	4
W.S. CENTRAL	5,518	3,897	24	2,264	2,376	41	15	82	565
Ark.	336	225	2	256	270	30	-	19	85
La.	1,397	774	-	292	306	-	1	1	12
Okla.	108	136	13	194	218	11	1	49	90
Tex.	3,677	2,762	9	1,522	1,582	-	13	13	378
MOUNTAIN	735	743	44	425	556	16	12	24	246
Mont.	1	3	-	16	30	1	-	14	71
Idaho	1	2	4	23	19	-	-	4	11
Wyo.	6	1	2	-	5	3	-	2	74
Colo.	60	99	9	19	97	3	2	3	21
N. Mex.	26	46	5	76	95	2	1	1	21
Ariz.	293	146	11	215	225	-	8	-	27
Utah	15	15	9	37	29	6	1	-	9
Nev.	333	431	4	39	56	1	-	-	12
PACIFIC	4,453	5,732	60	3,738	3,462	6	149	4	384
Wash.	386	216	4	207	204	-	9	-	-
Oreg.	211	273	-	126	132	4	6	1	-
Calif.	3,833	5,202	55	3,200	2,946	2	125	3	318
Alaska	9	14	-	44	40	-	-	-	66
Hawaii	14	27	1	161	140	-	9	-	-
Guam	4	3	-	68	30	-	3	-	-
P.R.	482	605	-	276	216	-	10	-	67
V.I.	8	2	-	4	6	-	1	-	-
Amer. Samoa	-	-	-	5	4	-	8	-	-
C.N.M.I.	8	1	-	21	24	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending November 18, 1989 (46th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	700	485	124	57	18	16	48
Boston, Mass.	180	108	46	13	4	9	24
Bridgeport, Conn.	46	31	8	4	3	-	3
Cambridge, Mass.	30	22	4	4	-	-	1
Fall River, Mass.	28	16	10	1	1	-	-
Hartford, Conn.	63	45	10	7	-	1	1
Lowell, Mass.	28	23	3	1	1	-	1
Lynn, Mass.	25	19	5	1	-	-	1
New Bedford, Mass.	30	21	4	4	-	1	1
New Haven, Conn.	49	33	6	5	4	1	3
Providence, R.I.	55	39	9	6	1	-	1
Somerville, Mass.	7	6	1	-	-	-	-
Springfield, Mass.	45	31	7	3	1	3	1
Waterbury, Conn.	38	32	2	-	3	1	4
Worcester, Mass.	76	59	9	8	-	-	7
MID. ATLANTIC	3,000	1,900	585	339	84	90	155
Albany, N.Y.	60	39	13	3	2	3	3
Allentown, Pa.	17	11	5	1	-	-	1
Buffalo, N.Y.§	101	68	19	9	2	3	5
Camden, N.J.	39	23	12	2	-	2	-
Elizabeth, N.J.§	22	17	4	1	-	-	1
Erie, Pa.†	42	33	9	-	-	-	2
Jersey City, N.J.	72	35	15	17	4	1	4
N.Y. City, N.Y.	1,525	928	302	206	46	43	62
Newark, N.J.	91	42	26	15	6	2	2
Paterson, N.J.	36	24	9	2	1	-	2
Philadelphia, Pa.	497	313	94	49	19	20	26
Pittsburgh, Pa.†	67	45	10	9	-	3	3
Reading, Pa.	33	31	1	1	-	-	5
Rochester, N.Y.	135	98	26	6	3	2	16
Schenectady, N.Y.	21	16	3	1	-	1	1
Scranton, Pa.†	30	24	5	1	-	-	4
Syracuse, N.Y.	105	77	19	5	1	3	8
Trenton, N.J.	54	34	8	7	-	5	5
Utica, N.Y.	21	18	3	-	-	-	-
Yonkers, N.Y.	32	24	2	4	-	2	5
E.N. CENTRAL	2,497	1,646	524	186	67	74	101
Akron, Ohio	78	55	11	3	3	6	-
Canton, Ohio	47	30	10	6	1	-	3
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	127	92	25	6	3	1	9
Cleveland, Ohio	155	95	32	15	9	4	3
Columbus, Ohio	201	135	41	12	8	5	1
Dayton, Ohio	124	91	20	9	2	2	7
Detroit, Mich.	309	169	75	40	19	6	3
Evansville, Ind.	37	32	3	1	-	1	4
Fort Wayne, Ind.§	64	49	11	3	-	1	2
Gary, Ind.	22	11	5	4	1	1	-
Grand Rapids, Mich.	61	45	10	3	-	3	8
Indianapolis, Ind.	175	109	44	14	4	4	5
Madison, Wis.	40	25	9	4	-	2	4
Milwaukee, Wis.	131	102	21	1	3	4	2
Peoria, Ill.	69	45	13	6	2	3	7
Rockford, Ill.	54	39	12	1	-	2	4
South Bend, Ind.	51	38	7	4	-	2	1
Toledo, Ohio	91	60	24	5	1	1	11
Youngstown, Ohio	97	62	26	4	1	4	11
W.N. CENTRAL	794	543	151	60	22	18	37
Des Moines, Iowa	85	58	21	5	1	-	12
Duluth, Minn.	38	26	10	2	-	-	1
Kansas City, Kans.	49	27	11	7	3	1	-
Kansas City, Mo.	115	78	25	9	2	1	6
Lincoln, Nebr.	40	33	3	2	2	-	5
Minneapolis, Minn.	139	102	26	7	2	2	6
Omaha, Nebr.	62	46	9	4	1	2	4
St. Louis, Mo.	131	83	26	14	4	4	3
St. Paul, Minn.	75	52	12	3	4	4	-
Wichita, Kans.	60	38	8	7	3	4	-
S. ATLANTIC	1,248	762	240	157	44	40	43
Atlanta, Ga.	172	90	42	25	8	7	4
Baltimore, Md.	201	130	30	31	2	5	8
Charlotte, N.C.	88	52	18	11	5	2	10
Jacksonville, Fla.	135	91	25	14	2	3	3
Miami, Fla.	124	57	25	24	11	6	-
Norfolk, Va.	50	26	15	5	3	1	3
Richmond, Va.	66	42	16	6	-	2	5
Savannah, Ga.	48	27	12	4	2	3	4
St. Petersburg, Fla.	82	65	9	3	2	3	1
Tampa, Fla.	54	37	9	5	2	1	2
Washington, D.C.	207	126	38	28	7	7	3
Wilmington, Del.	21	19	1	1	-	-	-
E.S. CENTRAL	778	520	161	53	24	20	60
Birmingham, Ala.	115	78	22	12	2	1	4
Chattanooga, Tenn.	52	39	8	2	2	1	3
Knoxville, Tenn.	78	52	16	4	3	3	8
Louisville, Ky.	73	51	15	4	1	2	8
Memphis, Tenn.	190	125	34	14	11	6	21
Mobile, Ala.	70	50	12	5	2	1	-
Montgomery, Ala.	55	36	13	2	1	3	5
Nashville, Tenn.	145	89	41	10	2	3	11
W.S. CENTRAL	1,736	1,062	377	197	55	45	84
Austin, Tex.	86	41	27	14	3	1	8
Baton Rouge, La.	36	23	6	5	1	1	5
Corpus Christi, Tex.	43	28	9	5	1	-	2
Dallas, Tex.	187	114	38	22	6	7	7
El Paso, Tex.	54	30	10	8	4	2	2
Fort Worth, Tex	89	58	17	8	4	2	7
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	96	58	22	11	1	4	5
New Orleans, La.	84	57	14	9	2	2	-
San Antonio, Tex.	178	112	38	16	7	5	16
Shreveport, La.	41	26	8	3	-	4	3
Tulsa, Okla.	108	79	19	7	2	1	11
MOUNTAIN	811	509	157	67	52	26	54
Albuquerque, N. Mex.	111	65	16	12	16	2	10
Colo. Springs, Colo.	52	33	9	4	1	5	2
Denver, Colo.	119	77	24	13	4	1	10
Las Vegas, Nev.	118	75	24	11	8	-	12
Ogden, Utah	35	20	7	5	2	1	5
Phoenix, Ariz.	209	129	48	11	13	8	6
Pueblo, Colo.	15	12	1	-	1	1	1
Salt Lake City, Utah	39	17	7	5	3	7	3
Tucson, Ariz.	113	81	21	6	4	1	5
PACIFIC	2,093	1,411	376	191	61	49	127
Berkeley, Calif.	11	10	-	1	-	-	-
Fresno, Calif.§	81	58	14	4	2	3	5
Glendale, Calif.	31	21	6	3	1	-	5
Honolulu, Hawaii	89	62	16	8	1	2	12
Long Beach, Calif.	82	52	18	6	2	4	16
Los Angeles Calif.	649	424	106	74	32	10	15
Oakland, Calif.	60	38	12	6	2	2	3
Pasadena, Calif.	37	29	2	1	3	2	2
Portland, Oreg.	120	83	27	7	1	2	6
Sacramento, Calif.	182	114	42	17	5	3	15
San Diego, Calif.	136	97	21	11	4	3	9
San Francisco, Calif.	153	83	43	23	-	3	5
San Jose, Calif.	214	157	33	17	3	4	17
Seattle, Wash.	161	115	24	10	5	7	7
Spokane, Wash.	51	36	9	3	-	3	6
Tacoma, Wash.	36	32	3	-	-	1	4
TOTAL	13,657††	8,838	2,695	1,307	427	378	709

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

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

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

Chronic Liver Disease — Continued

Forty-eight percent of deaths from chronic liver disease occurred in persons aged <60 years (*2*); chronic liver disease accounted for 2% of years of potential life lost before age 65 (*3*). Rates of chronic liver disease mortality were highest among persons aged 65–74 years (51.9 per 100,000 males and 25.8 per 100,000 females). When adjusted for age, mortality from chronic liver disease was 2.3 times higher in males than in females and 1.7 times higher in blacks than in whites (*4*).

The highest rates of chronic liver disease mortality in 1986 (age-adjusted to the 1986 U.S. population) occurred in southwestern states and in California, Delaware, the District of Columbia, Florida, Illinois, Massachusetts, Michigan, New Jersey, and New York (Table 2, Figure 1). Arkansas had the lowest rate (5.9 per 100,000) and the District of Columbia, the highest (30.9 per 100,000).

Reported by: Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office; Hepatitis Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Risk factors for chronic liver disease include drug and occupational exposures; infection with hepatitis B virus; parenterally transmitted non-A, non-B hepatitis virus; and other diseases (*5,6*). Consumption of alcoholic beverages is a well-established risk factor for cirrhosis (*7*); risk of cirrhosis mortality increases with the amount of alcohol consumed and the duration of elevated consumption (*8*). Other environmental or genetic factors can also play a role in the development of cirrhosis (*9*).

Average daily consumption of ≥1 oz. of ethanol (approximately two drinks of wine, beer, or spirits) is regarded as "heavy drinking" (*7*). Based on recent rates of heavy drinking (*4*) and a risk of cirrhosis mortality seven times higher in heavy drinkers than in nonheavy drinkers (recalculated from [*10*]), at least 15% of cirrhosis mortality among females and 46% of cirrhosis mortality among males is attributable to heavy

CHRONIC DISEASE REPORTS: CHRONIC LIVER DISEASE, TABLE 1. Chronic liver disease (ICD-9 571) indices — United States, 1986

Index	No.	Rate per 100,000
Mortality		
Underlying cause	26,151	10.8
Male	16,790	14.3
Female	9,361	7.6
Multiple cause*	39,626	16.4
Male	25,782	22.0
Female	13,844	11.2
Hospitalizations†	66,325	27.5
Years of potential life lost before age 65§	231,558	133.4

*NCHS. Vital statistics mortality data, multiple cause of death detail, 1986 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988 (ICD-9 571).

†NCHS. National Hospital Discharge Survey, 1987 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987 (ICD-9 571).

§Calculated from NCHS. 1986 Underlying cause of death [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988 (ICD-9 571).

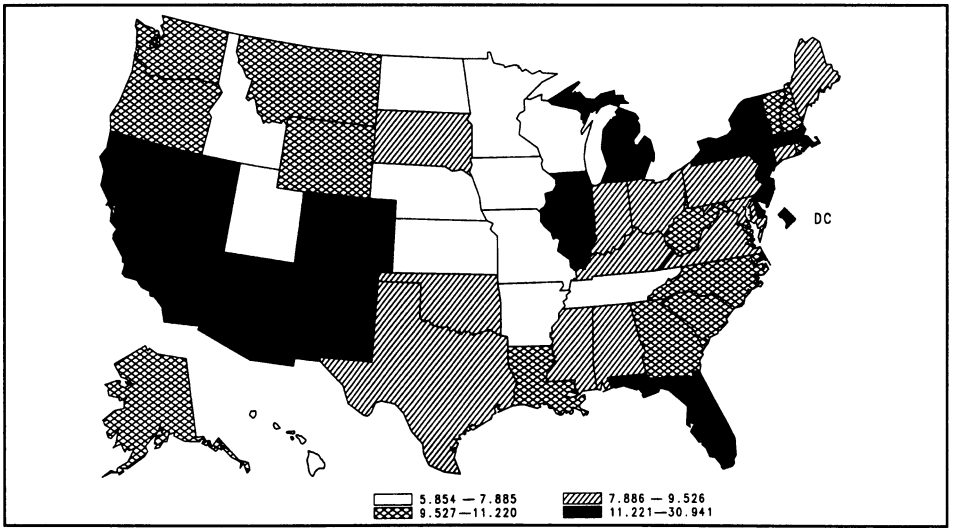
Chronic Liver Disease — Continued

CHRONIC DISEASE REPORTS: CHRONIC LIVER DISEASE, TABLE 2. Age-adjusted chronic liver disease mortality, by area — United States, 1986

Area	Deaths	Rate per 100,000	Rank by rate
Alabama	358	8.9	36
Alaska	32	11.1	14
Arizona	373	11.2	13
Arkansas	150	5.9	51
California	3,971	15.4	4
Colorado	309	11.4	12
Connecticut	323	9.4	30
Delaware	87	13.8	6
District of Columbia	203	30.9	1
Florida	1,679	11.4	11
Georgia	565	10.2	19
Hawaii	67	6.8	49
Idaho	66	7.3	45
Illinois	1,334	11.6	10
Indiana	427	7.9	39
Iowa	189	6.2	50
Kansas	117	7.0	48
Kentucky	306	8.3	38
Louisiana	377	9.5	26
Maine	117	9.5	29
Maryland	391	9.2	33
Massachusetts	751	12.1	9
Michigan	1,120	13.6	8
Minnesota	304	7.4	42
Mississippi	238	9.5	27
Missouri	398	7.4	43
Montana	77	9.6	25
Nebraska	117	7.2	47
Nevada	170	18.1	2
New Hampshire	102	10.3	17
New Jersey	1,044	12.7	7
New Mexico	218	16.6	3
New York	2,697	14.4	5
North Carolina	632	10.0	20
North Dakota	47	7.4	44
Ohio	1,011	9.3	31
Oklahoma	281	8.7	37
Oregon	298	11.0	15
Pennsylvania	1,239	9.3	32
Rhode Island	109	9.9	21
South Carolina	311	9.7	23
South Dakota	63	8.9	35
Tennessee	378	7.8	40
Texas	1,372	9.5	28
Utah	89	7.3	46
Vermont	55	10.8	16
Virginia	498	9.2	34
Washington	415	9.7	24
West Virginia	205	10.2	18
Wisconsin	373	7.7	41
Wyoming	38	9.8	22
Total	**26,151**	**10.8**	

Chronic Liver Disease — Continued

CHRONIC DISEASE REPORTS: CHRONIC LIVER DISEASE, FIGURE 1. Annual age-adjusted mortality rates per 100,000 population, by quartile — United States, 1986*



*U.S. standard age distribution. See *MMWR* 1989;38:191.

drinking. Thus, the reduction of heavy alcohol consumption remains an important means for the control of cirrhosis mortality.

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Apparent Per Capita Ethanol Consumption — United States, 1977–1986

Trend data on apparent ethanol consumption by beverage type reflect long-term alcohol consumption patterns. In 1986, 5.8 billion gallons of beer, 585.3 million gallons of wine, and 394.7 million gallons of spirits were sold in the United States.* For each person aged ≥14 years,† these amounts represent 29.8 gallons (approximately 318 12-oz. cans) of beer, 3.0 gallons (77 5-oz. glasses) of wine, and 2.1 gallons (179 1.5-oz. drinks) of spirits. When volumes of beer, wine, and spirits are converted into per capita ethanol volume,§ apparent per capita ethanol consumption in 1986 was: 1.34 gallons of ethanol for beer, 0.39 gallons of ethanol for wine, and 0.85 gallons of ethanol for spirits.

Apparent per capita consumption of ethanol from all beverages combined increased annually from 1977 to 1980, leveled in 1980 and 1981, then declined to 2.58 gallons in 1986—a 2.3% decrease from the 1977 level (Figure 1). Per capita consumption of spirits decreased over this period from a peak of 1.07 gallons in 1978 to 0.85 gallons in 1986. In contrast, wine consumption increased 0.1 gallons between 1977 and 1986, and beer consumption, 0.05 gallons.

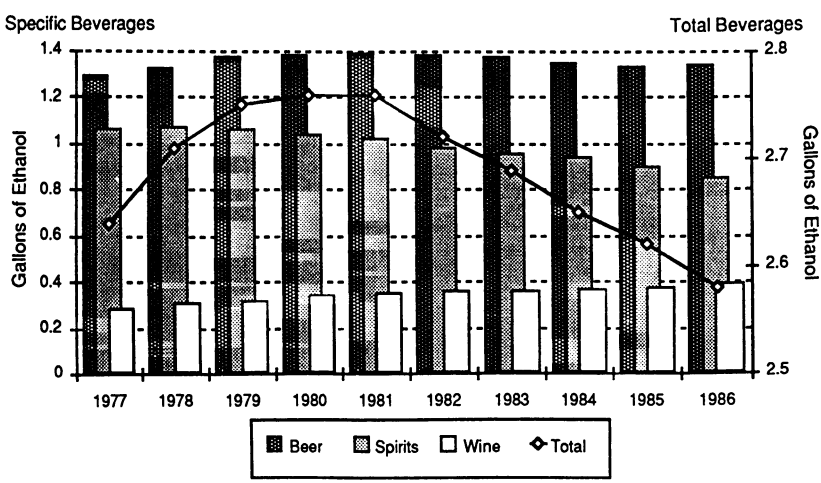
Data for specific states differ from national patterns and trends in beverage preference and consumption (Figures 2 and 3). Because nondrinkers as well as drinkers are included in the denominator from which apparent per capita consumption rates are calculated, these rates underestimate the average consumption among persons who drink alcoholic beverages. To adjust for abstention in per capita

*Based on 1986 beverage sales or tax receipt data from 33 states and the District of Columbia and on production and shipment data from beverage industry sources in 17 states that do not furnish data on beverage sales or tax receipts.

†Results from the 1983 Alcohol and Health Practices Survey indicated that 6.8% of the U.S. drinking population aged ≥18 years started drinking at ≤14 years of age (NCHS, unpublished data, 1986).

§Coefficients used to convert beer, wine, and spirits to ethanol were·0.045 for beer, 0.129 for wine, and 0.414 for spirits (*1*).

FIGURE 1. Apparent per capita ethanol consumption, by number of gallons — United States, 1977–1986



Ethanol Consumption — Continued

consumption, estimates of the percentage of abstainers in the population are necessary—ideally, from the same geographic units measured over the same time for which data on beverage sales are available. Behavioral Risk Factor Surveillance System data for individual states provided estimates of the percentage of abstainers in 26 states (Table 1). Excluding abstainers substantially alters the per capita consumption ranking of these states.

Reported by: MC Dufour, MD, National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration. FS Stinson, PhD, RA Steffens, CG Freel, D Clem, Alcohol Epidemiology Data System, CSR, Inc, District of Columbia.

FIGURE 2. Total apparent per capita consumption of ethanol, by number of gallons — United States, 1986

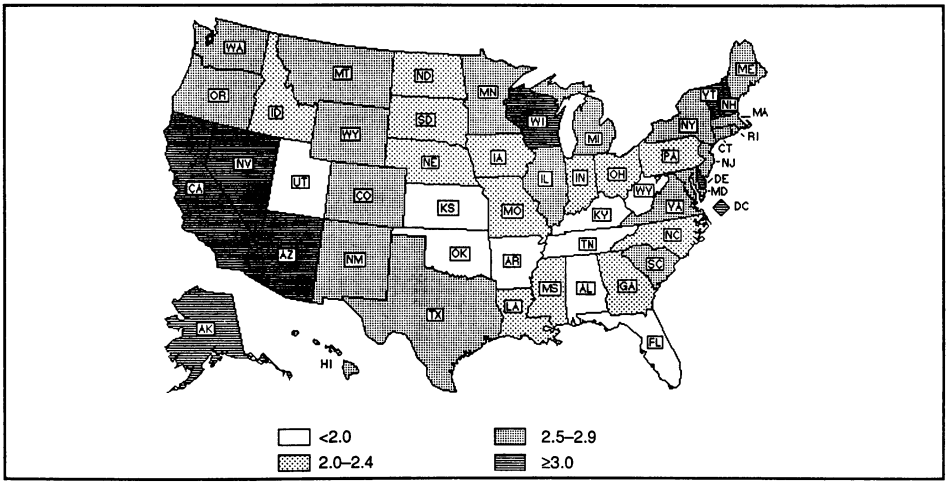
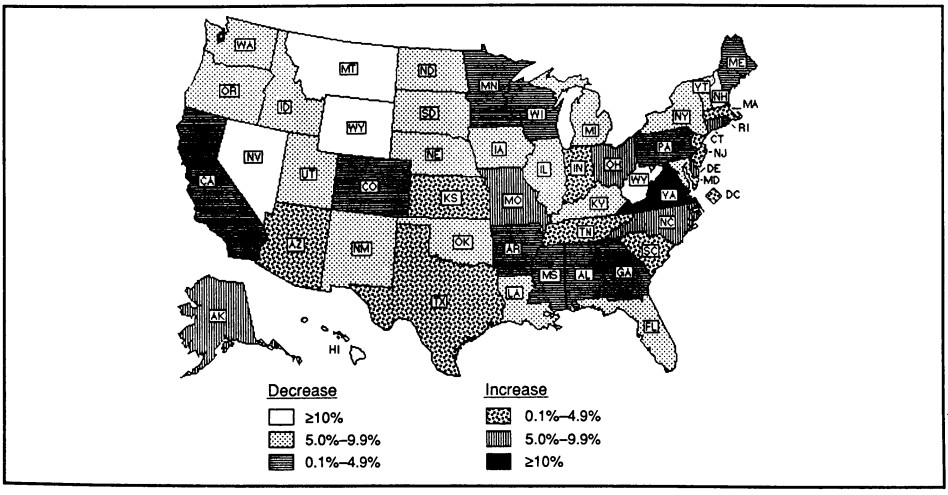


FIGURE 3. Percent change in apparent per capita consumption — United States, 1977–1986



Ethanol Consumption — Continued

Editorial Note: In 1986, the decline in consumption of distilled spirits in the United States was greater than for any year since 1956, in terms of both actual cases sold and percentage decrease (*2*). Per capita consumption of spirits in 1986 was at its lowest level since 1959 (*1*).

The decline in spirits consumption may represent changes in the drinking patterns and preferences in the drinking-aged population. These changes were reflected by

TABLE 1. Estimated per capita ethanol consumption* — selected areas, 1986

Area	Unadjusted consumption (gallons)	Percentage of abstainers† for area	Adjusted consumption among drinkers§ (gallons)
Alabama	1.9	61.8	5.0
Arizona	3.2	39.5	5.2
California	3.1	34.4	4.8
District of Columbia	5.7	44.1	10.2
Florida	3.0	39.8	4.9
Georgia	2.4	56.0	5.5
Hawaii	2.9	41.6	5.0
Idaho	2.3	46.4	4.3
Illinois	2.7	44.5	4.8
Indiana	2.2	46.9	4.1
Kentucky	1.9	59.3	4.5
Massachusetts	3.0	27.5	4.1
Minnesota	2.6	31.0	3.7
Missouri	2.4	47.0	4.5
Montana	2.7	34.6	4.2
New Mexico	2.7	49.2	5.3
New York	2.6	39.2	4.2
North Carolina	2.2	57.8	5.1
North Dakota	2.4	38.3	3.9
Ohio	2.2	41.8	3.8
Rhode Island	2.9	38.0	4.6
South Carolina	2.5	57.5	5.9
Tennessee	2.0	61.4	5.1
Utah	1.6	62.0	4.2
West Virginia	1.6	65.1	4.7
Wisconsin	3.2	25.9	4.3

*Based on estimates from the 1986 Behavioral Risk Factor Surveillance System, CDC.
†Includes persons who may be infrequent, moderate, or heavy drinkers but who have not had a drink for the preceding 30 days (e.g., because of illness, temporary abstinence, or participation in an alcohol-treatment program).
§Adjusted rates may overestimate individual per capita consumption because 1) sales data are based on annual reports, and 2) adjusted rates exclude persons who may have consumed alcohol during 1986 but not during the month before the survey. Therefore, the adjusted per capita estimates should be viewed as the upper limit of a range in which the actual per capita consumption falls.

Ethanol Consumption — Continued

greater interest in beverages with reduced alcohol content (e.g., "light" beers and wine coolers), as well as increased public awareness regarding physical fitness, nutrition, and alcohol abuse (*3–5*). In 1985, wine coolers accounted for 17% of the wine market (*3*) and, in 1986, nearly 25% (*2*). The increased popularity of wine coolers through 1986 may have accounted in part for the increases in wine consumption (*5*).

Although two thirds of the adult population drink alcoholic beverages, alcohol consumption is unevenly distributed throughout the drinking population: 10% of drinkers (6.5% of the adult population) account for half of all alcohol consumed in the United States (*6*). In some southern states, historically low levels of apparent per capita consumption may have reflected, in part, the high percentage of abstainers in those states.

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