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CENTERS FOR DISEASE CONTROL AND PREVENTION

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MORBIDITY AND MORTALITY WEEKLY REPORT

Current Trends

Mortality from Congestive Heart Failure — United States, 1980–1990

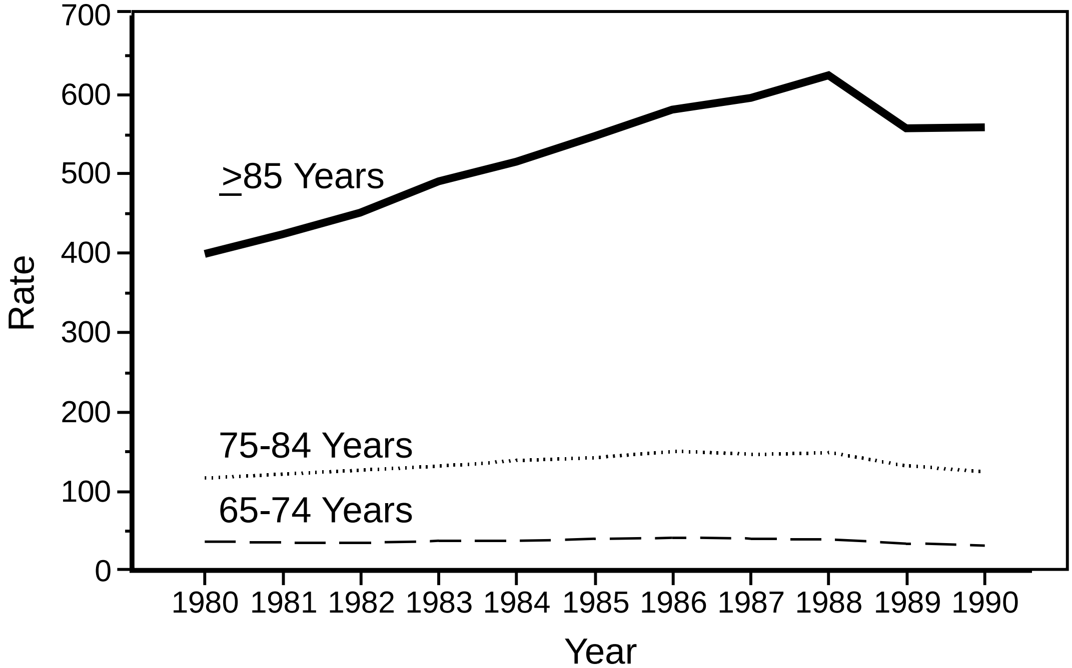
In the United States, congestive heart failure (CHF) was the underlying cause of death for approximately 38,000 persons in 1990; of those deaths, approximately 92% were among persons aged ≥65 years. CHF, a clinical syndrome defined as a chronic inadequate contraction of the heart muscle resulting in insufficient cardiac output, is a manifestation of one or more underlying conditions, including systemic or pulmonary hypertension or a history of other heart diseases (e.g., myocardial infarction, atherosclerosis, cardiomyopathy, congenital heart disease, or rheumatic fever). The long-term prognosis of CHF depends on the underlying condition and the response of that condition to treatment. Despite declines in death rates for ischemic heart disease and cerebrovascular disease (*1,2*), improvements in detection and treatment of hypertension (*3*), and considerable advances in the diagnosis and management of CHF (*4*), mortality from CHF has increased since 1980 (*5*). This report summarizes trends in CHF mortality in the United States during 1980–1990 and presents state-specific mortality data for 1990 (the most recent year for which such data are available).

Public-use mortality data tapes compiled by CDC's National Center for Health Statistics and population estimates from the U.S. Bureau of the Census were used to calculate crude and age-adjusted CHF death rates for the U.S. population. CHF deaths were defined as deaths for which the underlying cause was listed on the death certificate as *International Classification of Diseases, Ninth Revision*, codes 428.0–428.9. State- and group-specific age-adjusted estimates were standardized to the 1980 U.S. population. Race-specific denominator data were available only for blacks and whites.

In 1990, a total of 37,935 deaths resulted from CHF. Crude death rates for CHF per 100,000 persons were directly proportionate to age. For persons aged ≥85 years, the crude death rate was 559.1—fivefold higher than the rate for persons aged 75–84 years (124.7) and 18-fold higher than that for persons aged 65–74 years (31.6).

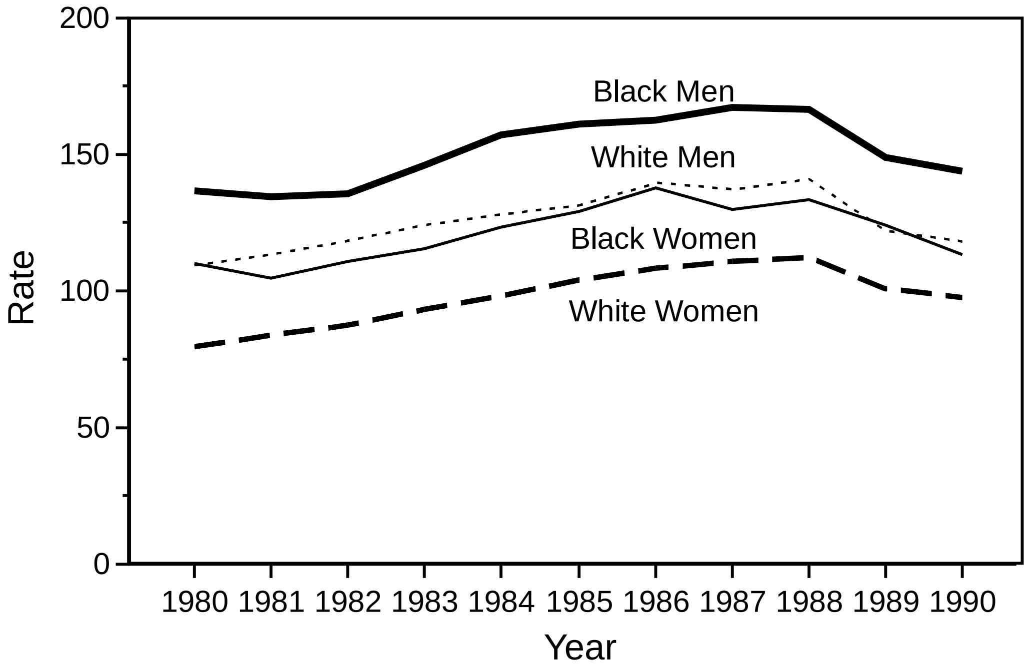
Congestive Heart Failure — Continued

FIGURE 1. Age-specific crude death rate* for congestive heart failure† for persons aged ≥65 years, by age group — United States, 1980–1990



*Per 100,000 population.
†*International Classification of Diseases, Ninth Revision,* codes 428.0–428.9.

FIGURE 2. Age-adjusted death rate* for congestive heart failure† for persons aged ≥65 years, by race§ and sex — United States, 1980–1990



*Per 100,000 population; standardized to the 1980 U.S. Bureau of the Census population.
†*International Classification of Diseases, Ninth Revision,* codes 428.0–428.9.
§Race-specific denominator data were available only for blacks and whites.

Congestive Heart Failure — Continued

The age-adjusted death rate for CHF among persons aged ≥65 years was 143.9 for black men, 117.8 for white men, 113.4 for black women, and 97.5 for white women.

Crude death rates for CHF increased during 1980–1988 for persons aged ≥65 years (Figure 1); rates declined slightly during 1989–1990. For persons aged ≥65 years, age-adjusted death rates for CHF increased during 1980–1988 for each of the race and sex groups (Figure 2); rates were higher among blacks and men.

In 1990, age-adjusted CHF death rates varied substantially among the states and ranged from 3.7 (Florida) to 31.5 (Alabama) (Table 1). For persons aged ≥65 years, state-specific CHF death rates ranged from 29.9 (Florida) to 246.2 (Alabama).

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Editorial Note: In the United States, an estimated 1–2 million persons aged 25–74 years are affected by CHF (*6*). The impact of CHF is particularly severe among the elderly because of the emotional and economic burdens (e.g., functional disability, long-term pharmacologic therapy, and frequent hospitalizations) associated with the syndrome. In addition, the prognosis for CHF is poor: for example, of newly diagnosed cases in Rochester, Minnesota, in 1981, survival following diagnosis was 80% at 3 months, 66% at 1 year, and 30% at 8 years (*7*).

The findings in this report document substantial increases in CHF death rates during 1980–1990 among persons in older age groups. Potential explanations for these increases, and for increases in hospitalization rates for CHF, include the increasing average age of the U.S. population and the longer survival of persons with hypertension or symptomatic cardiac diseases who subsequently develop CHF at an older age (*3,5,8*). Race-specific variations in CHF death rates especially may reflect the substantially higher prevalence and greater severity of hypertension among blacks. In addition, hospitalization (*8*) and death rates for CHF (*5*) were higher for younger blacks than for whites, suggesting an earlier onset of disease and perhaps greater severity of CHF among blacks. Potential explanations for regional variations in CHF mortality include differences in prevalences of underlying conditions, in access to early diagnosis and/or therapeutic management of CHF and its underlying conditions, and in coding of death certificates.

Because the *U.S. Standard Certificate of Death* was revised in 1989 to improve specificity of causes of death (*9*), the declines in CHF mortality during 1989 and 1990 may reflect deaths attributed to specific precipitating diseases rather than actual declines in CHF (*5*). In addition, the derivation of rates based on underlying cause-of-death listings also may account for an underestimation of CHF-related deaths: for example, in 1988, CHF was mentioned on death certificates as a contributing or secondary cause approximately five times more often than as the underlying cause (*5*).

Despite progress in the treatment of CHF (*4*), public health efforts should continue to target prevention and treatment of the underlying conditions associated with increased risk for CHF. For most U.S. residents, primary prevention of CHF includes adherence to lifestyles associated with prevention of hypertension and myocardial infarction (e.g., reduced dietary fat and/or sodium, weight maintenance, regular physical activity, and smoking cessation).

Congestive Heart Failure — Continued

TABLE 1. Number of deaths from and age-adjusted death rates for congestive heart failure* among persons aged ≥65 years† and overall§, by state — United States, 1990

	Persons aged ≥65 yrs		Overall	
State	**No.**	**Rate**	**No.**	**Rate**
Alabama	1,322	246.2	1,464	31.5
Alaska	12	72.9	15	9.2
Arizona	454	99.5	502	12.7
Arkansas	706	186.5	758	23.4
California	1,791	55.4	1,942	6.9
Colorado	170	48.6	184	6.0
Connecticut	469	96.6	483	11.4
Delaware	89	112.1	92	13.2
District of Columbia	95	117.6	118	17.6
Florida	722	29.9	766	3.7
Georgia	949	145.5	1,056	18.4
Hawaii	83	72.9	90	8.9
Idaho	140	110.2	150	13.7
Illinois	1,997	129.3	2,145	16.0
Indiana	1,174	155.7	1,267	19.4
Iowa	452	85.2	462	10.0
Kansas	630	150.0	656	18.1
Kentucky	913	184.7	1,012	23.7
Louisiana	771	161.0	887	21.3
Maine	170	92.5	185	11.8
Maryland	597	116.5	654	14.5
Massachusetts	1,168	126.2	1,235	15.5
Michigan	1,246	107.9	1,314	13.0
Minnesota	659	98.4	681	11.7
Mississippi	742	216.7	809	27.4
Missouri	1,018	124.0	1,090	15.5
Montana	165	144.7	172	17.4
Nebraska	435	155.9	468	19.9
Nevada	152	143.3	175	18.1
New Hampshire	148	107.0	157	13.0
New Jersey	805	76.7	866	9.5
New Mexico	174	108.2	185	13.0
New York	2,328	91.2	2,514	11.4
North Carolina	768	96.3	832	11.9
North Dakota	161	141.7	170	17.6
Ohio	1,787	121.4	1,914	15.0
Oklahoma	804	169.0	858	20.9
Oregon	411	97.7	423	11.5
Pennsylvania	2,229	118.6	2,412	14.9
Rhode Island	92	56.6	96	6.8
South Carolina	495	132.8	568	17.3
South Dakota	145	113.8	154	14.3
Tennessee	595	92.2	650	11.6
Texas	1,557	86.9	1,756	11.2
Utah	231	149.5	242	17.8
Vermont	69	91.3	73	11.1
Virginia	978	147.4	1,094	18.8
Washington	641	104.7	665	12.4
West Virginia	444	159.2	483	20.1
Wisconsin	856	113.9	907	14.0
Wyoming	83	167.9	84	19.3
Total	**35,092**	**106.4**	**37,935**	**13.3**

* *International Classification of Diseases, Ninth Revision,* codes 428.0–428.9.
† Per 100,000 population; standardized to the 1980 U.S. Bureau of the Census population aged ≥65 years.
§ Per 100,000 population; standardized to the 1980 U.S. Bureau of the Census population.

Congestive Heart Failure — Continued

References

1. CDC. Trends in ischemic heart disease mortality—United States, 1980–1988. MMWR 1992; 41:548–9,555–6.
2. CDC. Cerebrovascular disease mortality and Medicare hospitalization—United States, 1980–1990. MMWR 1992;41:477–80.
3. Yusuf S, Thom T, Abbott RD. Changes in hypertension treatment and in congestive heart failure mortality in the United States. Hypertension 1989;13(suppl 5):I-74–I-79.
4. Armstrong PW, Moe GW. Medical advances in the treatment of congestive heart failure. Circulation 1993;88:2941–52.
5. Gillum RF. Epidemiology of heart failure in the United States. Am Heart J 1993;126:1042–7.
6. Schocken DD, Arrieta MI, Leaverton PE, Ross EA. Prevalence and mortality of congestive heart failure in the United States. J Am Coll Cardiol 1992;20:301–6.
7. Rodeheffer RJ, Jacobsen SJ, Gersh BJ, et al. The incidence and prevalence of congestive heart failure in Rochester, Minnesota. Mayo Clin Proc 1993;68:1143–50.
8. Ghali JK, Cooper R, Ford E. Trends in hospitalization rates for heart failure in the United States, 1973–1986: evidence for increasing population prevalence. Arch Intern Med 1990;150:769–73.
9. NCHS. Advance report of final mortality statistics, 1989. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1992. (Monthly vital statistics report; vol 40, no. 8, suppl 2).

Emerging Infectious Diseases

Foodborne Outbreaks of Enterotoxigenic *Escherichia coli* — Rhode Island and New Hampshire, 1993

Infections with enterotoxigenic *Escherichia coli* (ETEC) are a frequent cause of diarrhea in developing countries but not in the United States and other industrialized countries. This report describes two foodborne ETEC outbreaks that occurred in the United States in 1993.

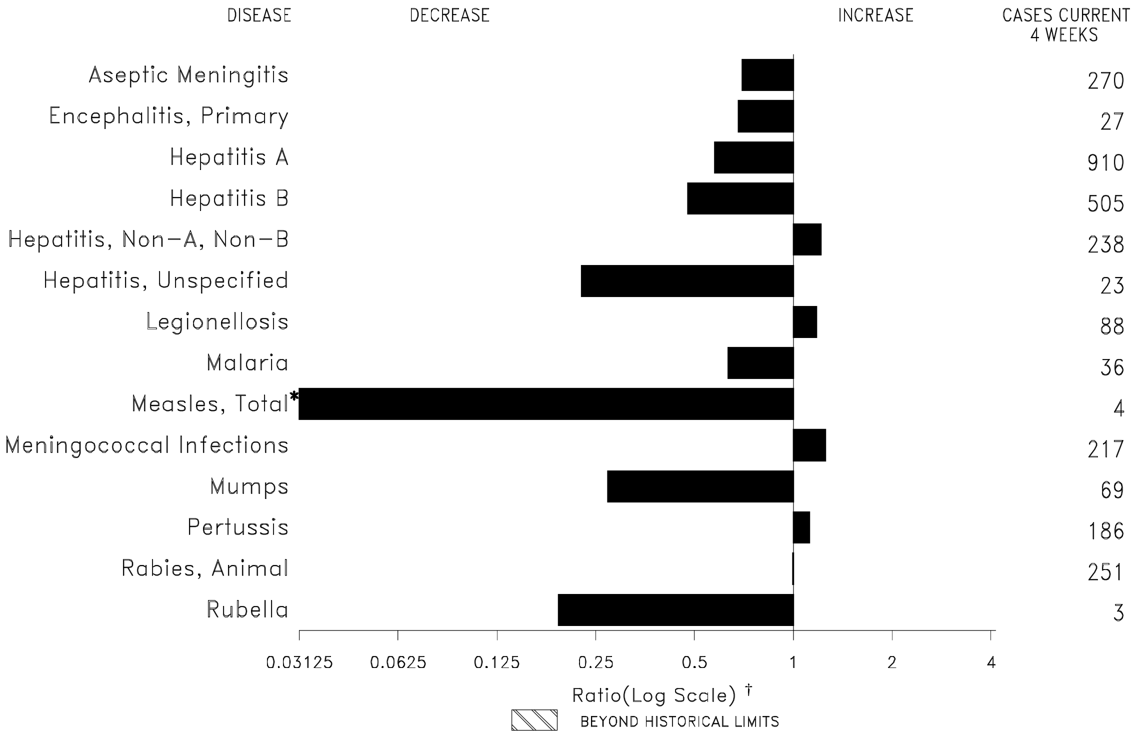
Rhode Island

On March 25, the Rhode Island Department of Health was notified of gastrointestinal illness among passengers on an airline flight from Charlotte, North Carolina, to Providence, Rhode Island, on March 21. The flight carried 98 passengers; 47 (64%) of 74 passengers who were interviewed met the case definition of three or more loose stools in 24 hours beginning within 4 days after the flight. Additional symptoms included abdominal cramps (94%), nausea (70%), headache (57%), fever (13%), and vomiting (13%). The only common meal for all ill passengers was dinner served on board the flight. The median incubation period was 41 hours (range: 12–77 hours); two (5%) of 44 persons recovered within 48 hours of onset of illness.

Illness was most strongly associated with eating garden salad made from shredded carrots and iceberg, romaine, and endive lettuce (46 [98%] of 47 ill passengers compared with six [22%] of 27 well passengers; relative risk [RR]=4.4; 95% confidence interval [CI]=2.2–8.9). Investigators from the Food and Drug Administration (FDA) contacted 18 passengers who had traveled on March 21 on a different flight operated by the airline and who had been served the same meal; nine passengers reported gastrointestinal illness. On March 21, approximately 4000 portions of salad had been

(Continued on page 87)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending February 5, 1994, with historical data — United States



*The large apparent decrease in reported cases of measles (total) reflects dramatic fluctuations in the historical baseline. (Ratio (log scale) for week five is 0.01349).

†Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending February 5, 1994 (5th Week)

	Cum. 1994		Cum. 1994
AIDS*	6,531	Measles: imported	2
Anthrax	-	indigenous	4
Botulism: Foodborne	6	Plague	-
Infant	1	Poliomyelitis, Paralytic§	-
Other	2	Psittacosis	2
Brucellosis	3	Rabies, human	-
Cholera	-	Syphilis, primary & secondary	1,603
Congenital rubella syndrome	-	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	2
Encephalitis, post-infectious	10	Toxic shock syndrome	15
Gonorrhea	29,509	Trichinosis	-
Haemophilus influenzae (invasive disease)†	94	Tuberculosis	1,164
Hansen Disease	11	Tularemia	-
Leptospirosis	5	Typhoid fever	18
Lyme Disease	183	Typhus fever, tickborne (RMSF)	7

*Updated monthly; last update January 25, 1994.
†Of 89 cases of known age, 26 (29%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1994; 3 cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending February 5, 1994, and February 6, 1993 (5th Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	6,531	389	41	10	29,509	38,123	1,355	715	391	33	115	183
NEW ENGLAND	188	23	4	-	817	799	26	31	11	5	10	21
Maine	-	4	1	-	4	7	-	-	-	-	-	-
N.H.	10	-	-	-	-	6	2	1	3	-	-	1
Vt.	2	3	-	-	2	6	-	-	-	-	-	-
Mass.	79	7	2	-	293	354	14	28	3	5	9	15
R.I.	42	9	1	-	33	49	8	2	5	-	1	5
Conn.	55	-	-	-	485	377	2	-	-	-	-	-
MID. ATLANTIC	2,489	29	3	2	1,447	4,355	46	47	31	2	7	105
Upstate N.Y.	151	9	1	-	307	519	14	13	13	-	-	28
N.Y. City	1,874	-	-	-	-	1,950	-	-	-	-	-	-
N.J.	284	-	-	-	-	616	14	13	11	-	1	15
Pa.	180	20	2	2	1,140	1,270	18	21	7	2	6	62
E.N. CENTRAL	441	85	13	5	6,093	6,960	128	84	28	1	38	4
Ohio	109	28	4	-	2,180	2,045	56	21	-	-	21	4
Ind.	40	31	-	-	816	710	41	22	1	-	7	-
Ill.	256	3	2	-	1,200	2,230	7	1	-	-	1	-
Mich.	24	23	7	5	1,806	1,311	21	38	27	1	8	-
Wis.	12	-	-	-	91	664	3	2	-	-	1	-
W.N. CENTRAL	71	30	2	1	1,438	2,135	59	34	42	1	15	1
Minn.	18	-	1	-	376	276	4	1	-	-	-	-
Iowa	5	13	-	-	109	166	4	2	-	-	4	-
Mo.	8	8	-	-	608	1,117	32	27	42	1	3	-
N. Dak.	-	-	-	-	-	10	-	-	-	-	-	-
S. Dak.	3	-	-	-	4	20	-	-	-	-	-	-
Nebr.	5	1	1	1	-	105	15	2	-	-	7	-
Kans.	32	8	-	-	341	441	4	2	-	-	1	1
S. ATLANTIC	1,180	85	5	-	10,343	9,944	105	188	75	4	21	42
Del.	2	-	-	-	155	136	1	5	16	-	-	20
Md.	45	8	2	-	1,773	1,647	23	23	9	1	6	6
D.C.	40	2	-	-	842	566	4	5	-	-	-	-
Va.	48	9	3	-	1,689	577	8	9	2	-	2	-
W. Va.	4	3	-	-	69	77	1	3	1	-	1	1
N.C.	82	15	-	-	2,652	1,986	8	37	10	-	1	8
S.C.	25	3	-	-	1,168	1,138	5	1	-	-	1	-
Ga.	252	4	-	-	-	1,383	14	77	20	-	6	7
Fla.	682	41	-	-	1,995	2,434	41	28	17	3	4	-
E.S. CENTRAL	99	33	3	1	4,064	3,422	39	86	96	-	8	1
Ky.	22	19	2	1	401	477	23	3	2	-	-	1
Tenn.	42	2	1	-	919	804	5	74	94	-	6	-
Ala.	22	10	-	-	1,733	1,171	9	9	-	-	-	-
Miss.	13	2	-	-	1,011	970	2	-	-	-	2	-
W.S. CENTRAL	754	8	-	-	2,389	5,252	108	68	34	4	1	-
Ark.	10	2	-	-	820	1,084	3	2	-	-	-	-
La.	83	1	-	-	1,569	1,182	7	6	3	-	-	-
Okla.	13	-	-	-	-	314	18	32	30	-	1	-
Tex.	648	5	-	-	-	2,672	80	28	1	4	-	-
MOUNTAIN	75	10	2	-	713	1,158	249	43	34	2	7	4
Mont.	2	-	-	-	20	10	2	2	-	-	2	-
Idaho	1	-	-	-	5	10	26	3	13	-	-	-
Wyo.	-	-	-	-	11	5	2	3	7	-	-	-
Colo.	27	5	-	-	280	464	10	-	4	1	1	-
N. Mex.	13	1	-	-	103	90	96	22	4	1	1	4
Ariz.	21	3	-	-	106	361	86	6	1	-	-	-
Utah	-	1	-	-	29	11	16	2	3	-	-	-
Nev.	11	-	2	-	159	207	11	5	2	-	3	-
PACIFIC	1,231	86	9	1	2,205	4,098	595	134	40	14	8	5
Wash.	47	-	-	-	324	400	49	9	7	-	2	-
Oreg.	53	-	-	-	140	148	40	9	1	1	-	-
Calif.	1,108	70	8	-	1,617	3,468	482	109	29	13	6	5
Alaska	3	1	1	-	52	46	18	-	-	-	-	-
Hawaii	20	15	-	1	72	36	6	7	3	-	-	-
Guam	-	-	-	-	-	11	-	-	-	-	-	-
P.R.	209	-	-	-	51	37	-	12	1	1	-	-
V.I.	5	-	-	-	3	11	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	4	4	2	-	-	-	-	-
C.N.M.I.	1	-	-	-	8	7	-	-	-	-	-	-

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

*Updated monthly; last update January 25, 1994.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending February 5, 1994, and February 6, 1993 (5th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	1994	Cum. 1994	Cum. 1993
UNITED STATES	51	2	4	-	2	25	302	31	92	117	294	296	1	4	14
NEW ENGLAND	4	-	-	-	-	15	19	3	4	2	11	86	-	1	1
Maine	1	-	-	-	-	-	3	3	3	2	2	3	-	-	1
N.H.	-	-	-	-	-	-	1	-	1	-	2	37	-	-	-
Vt.	-	-	-	-	-	6	-	-	-	-	5	12	-	-	-
Mass.	-	-	-	-	-	3	11	-	-	-	-	32	-	1	-
R.I.	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Conn.	-	-	-	-	-	6	4	-	-	-	2	1	-	-	-
MID. ATLANTIC	7	-	-	-	-	2	19	-	6	13	63	52	-	1	2
Upstate N.Y.	4	-	-	-	-	-	3	-	-	7	12	13	-	1	-
N.Y. City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N.J.	3	-	-	-	-	2	5	-	-	-	-	20	-	-	2
Pa.	-	-	-	-	-	-	11	-	6	6	51	19	-	-	-
E.N. CENTRAL	5	-	-	-	-	-	51	6	20	16	44	63	-	-	1
Ohio	1	-	-	-	-	-	13	6	6	15	33	21	-	-	-
Ind.	1	-	-	-	-	-	10	-	1	-	2	2	-	-	-
Ill.	-	-	-	-	-	-	17	-	6	-	-	9	-	-	-
Mich.	3	-	-	-	-	-	7	-	7	1	8	5	-	-	-
Wis.	-	-	-	-	-	-	4	-	-	-	1	26	-	-	1
W.N. CENTRAL	2	-	-	-	-	-	16	1	3	-	8	11	-	-	1
Minn.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Iowa	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-
Mo.	1	-	-	-	-	-	10	1	2	-	3	7	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
S. Dak.	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
Nebr.	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-
Kans.	-	-	-	-	-	-	2	-	-	-	5	-	-	-	-
S. ATLANTIC	16	2	2	-	-	4	60	9	26	29	64	10	1	1	2
Del.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Md.	4	-	-	-	-	1	4	-	4	5	16	2	-	-	-
D.C.	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Va.	2	1	1	-	-	1	7	2	2	5	8	1	-	-	-
W. Va.	-	-	-	-	-	-	4	1	1	-	1	-	-	-	-
N.C.	1	-	-	-	-	-	9	4	14	12	26	-	-	-	-
S.C.	1	-	-	-	-	-	1	2	3	-	5	2	-	-	-
Ga.	3	-	-	-	-	-	11	-	-	4	4	3	-	-	-
Fla.	4	1	1	-	-	2	23	-	2	3	4	2	1	1	1
E.S. CENTRAL	-	-	-	-	-	-	34	-	1	12	15	7	-	-	-
Ky.	-	-	-	-	-	-	8	-	-	-	-	2	-	-	-
Tenn.	-	-	-	-	-	-	8	-	-	11	12	1	-	-	-
Ala.	-	-	-	-	-	-	12	-	-	1	3	3	-	-	-
Miss.	-	-	-	-	-	-	6	-	1	-	-	1	-	-	-
W.S. CENTRAL	-	-	-	-	1	-	29	9	17	1	5	6	-	-	-
Ark.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
La.	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-
Okla.	-	-	-	-	-	-	5	2	5	-	4	6	-	-	-
Tex.	-	-	-	-	1	-	22	6	11	-	-	-	-	-	-
MOUNTAIN	1	-	1	-	-	2	20	-	2	1	5	11	-	-	2
Mont.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Idaho	-	-	1	-	-	-	1	-	1	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Colo.	-	-	-	-	-	2	1	-	-	1	1	-	-	-	-
N. Mex.	-	-	-	-	-	-	2	N	N	-	1	8	-	-	-
Ariz.	-	-	-	-	-	-	9	-	-	-	3	2	-	-	-
Utah	1	-	-	-	-	-	3	-	-	-	-	-	-	-	2
Nev.	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-
PACIFIC	16	-	1	-	1	2	54	3	13	43	79	50	-	1	5
Wash.	-	-	-	-	-	-	5	-	1	1	7	1	-	-	-
Oreg.	-	-	-	-	-	-	5	N	N	1	2	-	-	-	1
Calif.	12	-	1	-	1	1	43	3	10	40	65	46	-	1	2
Alaska	-	-	-	-	-	-	-	-	2	-	-	-	-	-	1
Hawaii	4	-	-	-	-	1	1	-	-	1	5	3	-	-	1
Guam	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
P.R.	-	-	-	-	-	41	1	-	-	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	1	-	12	-	-	-	-	-	-	-	-	-	-	-	-

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

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

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending February 5, 1994, and February 6, 1993 (5th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	1,603	2,861	15	1,164	1,237	-	18	7	360
NEW ENGLAND	21	56	1	16	14	-	3	-	127
Maine	-	-	-	-	3	-	-	-	-
N.H.	-	5	-	-	-	-	-	-	15
Vt.	-	-	-	-	-	-	-	-	9
Mass.	5	32	1	3	1	-	2	-	55
R.I.	3	1	-	1	-	-	-	-	-
Conn.	13	18	-	12	10	-	1	-	48
MID. ATLANTIC	134	233	3	81	197	-	-	-	48
Upstate N.Y.	12	24	2	-	23	-	-	-	-
N.Y. City	98	163	-	52	125	-	-	-	-
N.J.	-	39	-	15	20	-	-	-	30
Pa.	24	7	1	14	29	-	-	-	18
E.N. CENTRAL	169	464	4	111	139	-	3	-	2
Ohio	68	117	2	24	16	-	-	-	-
Ind.	22	26	-	7	6	-	1	-	-
Ill.	47	205	-	61	99	-	1	-	-
Mich.	27	64	2	15	13	-	1	-	-
Wis.	5	52	-	4	5	-	-	-	2
W.N. CENTRAL	76	171	5	25	21	-	-	-	13
Minn.	6	10	-	7	-	-	-	-	-
Iowa	7	14	4	3	3	-	-	-	7
Mo.	63	144	-	9	11	-	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	4	2	-	-	-	1
Nebr.	-	3	1	-	2	-	-	-	-
Kans.	-	-	-	2	3	-	-	-	4
S. ATLANTIC	531	744	-	164	163	-	4	5	125
Del.	1	12	-	-	3	-	-	-	1
Md.	15	41	-	26	23	-	2	-	47
D.C.	16	23	-	14	8	-	-	-	1
Va.	67	53	-	-	-	-	-	-	33
W. Va.	1	1	-	3	5	-	-	-	3
N.C.	182	217	-	-	49	-	-	4	7
S.C.	77	131	-	28	24	-	-	-	9
Ga.	83	134	-	93	51	-	-	1	24
Fla.	89	132	-	-	-	-	2	-	-
E.S. CENTRAL	369	317	-	49	60	-	-	1	9
Ky.	20	38	-	13	16	-	-	-	-
Tenn.	68	70	-	-	-	-	-	-	-
Ala.	77	83	-	34	33	-	-	-	9
Miss.	204	126	-	2	11	-	-	1	-
W.S. CENTRAL	283	664	-	26	10	-	1	1	7
Ark.	50	90	-	21	9	-	-	-	2
La.	233	218	-	-	-	-	-	-	-
Okla.	-	59	-	5	1	-	-	1	5
Tex.	-	297	-	-	-	-	1	-	-
MOUNTAIN	19	11	-	40	18	-	2	-	9
Mont.	-	-	-	-	-	-	-	-	-
Idaho	-	-	-	2	-	-	-	-	-
Wyo.	-	-	-	1	-	-	-	-	2
Colo.	11	6	-	-	-	-	1	-	-
N. Mex.	-	1	-	4	-	-	-	-	-
Ariz.	5	3	-	24	17	-	-	-	7
Utah	3	-	-	-	-	-	1	-	-
Nev.	-	1	-	9	1	-	-	-	-
PACIFIC	1	201	2	652	615	-	5	-	20
Wash.	1	5	-	19	19	-	-	-	-
Oreg.	-	7	-	8	6	-	-	-	-
Calif.	-	188	2	611	562	-	4	-	16
Alaska	-	-	-	-	1	-	-	-	4
Hawaii	-	1	-	14	27	-	1	-	-
Guam	-	-	-	-	1	-	-	-	-
P.R.	40	53	-	-	-	-	-	-	6
V.I.	1	10	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	1	-	-
C.N.M.I.	-	-	-	11	-	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending February 5, 1994 (5th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	671	480	107	56	12	16	63
Boston, Mass.	160	100	33	17	3	7	15
Bridgeport, Conn.	40	25	9	4	2	-	5
Cambridge, Mass.	21	17	4	-	-	-	1
Fall River, Mass.	30	29	1	-	-	-	2
Hartford, Conn.	54	38	5	7	2	2	4
Lowell, Mass.	29	24	2	2	1	-	1
Lynn, Mass.	34	27	5	2	-	-	1
New Bedford, Mass.	20	16	2	2	-	-	1
New Haven, Conn.	51	39	5	6	-	1	2
Providence, R.I.	53	40	9	3	1	-	6
Somerville, Mass.	8	6	2	-	-	-	1
Springfield, Mass.	52	35	10	4	1	2	7
Waterbury, Conn.	39	34	2	2	-	1	8
Worcester, Mass.	80	50	18	7	2	3	9
MID. ATLANTIC	2,769	1,813	518	282	82	74	157
Albany, N.Y.	49	34	11	2	1	1	-
Allentown, Pa.	32	24	6	2	-	-	1
Buffalo, N.Y.	100	71	17	4	5	3	3
Camden, N.J.	30	20	5	1	3	1	2
Elizabeth, N.J.	34	20	13	-	-	1	5
Erie, Pa.§	57	43	10	2	1	1	3
Jersey City, N.J.	73	47	13	10	1	2	3
New York City, N.Y.	1,491	952	289	180	42	28	69
Newark, N.J.	63	27	20	11	4	1	4
Paterson, N.J.	38	18	11	5	4	-	1
Philadelphia, Pa.	309	168	68	34	11	28	20
Pittsburgh, Pa.§	92	74	9	5	2	2	10
Reading, Pa.	15	10	2	1	2	-	4
Rochester, N.Y.	135	102	20	8	3	2	13
Schenectady, N.Y.	31	27	-	3	1	-	2
Scranton, Pa.§	42	35	3	2	-	2	2
Syracuse, N.Y.	105	80	13	8	2	2	11
Trenton, N.J.	27	22	4	1	-	-	1
Utica, N.Y.	14	11	1	2	-	-	-
Yonkers, N.Y.	32	28	3	1	-	-	3
E.N. CENTRAL	2,577	1,660	493	239	139	46	212
Akron, Ohio	58	49	8	-	-	1	1
Canton, Ohio	41	34	4	2	-	1	10
Chicago, Ill.	603	257	120	109	106	11	48
Cincinnati, Ohio	223	160	37	17	3	6	21
Cleveland, Ohio	173	117	43	11	1	1	6
Columbus, Ohio	228	146	50	18	9	5	16
Dayton, Ohio	147	106	30	6	-	5	13
Detroit, Mich.	258	156	62	30	9	1	11
Evansville, Ind.	64	53	7	3	-	1	6
Fort Wayne, Ind.	65	43	12	6	1	3	11
Gary, Ind.	22	13	4	2	1	2	1
Grand Rapids, Mich.	60	47	11	-	1	1	11
Indianapolis, Ind.	112	79	23	7	2	1	5
Madison, Wis.	51	43	5	1	1	1	7
Milwaukee, Wis.	154	113	28	11	1	1	18
Peoria, Ill.	43	33	8	2	-	-	5
Rockford, Ill.	59	47	6	4	1	1	5
South Bend, Ind.	36	25	7	2	1	1	1
Toledo, Ohio	123	93	20	5	2	3	11
Youngstown, Ohio	57	46	8	3	-	-	5
W.N. CENTRAL	1,059	799	153	59	19	29	71
Des Moines, Iowa	147	115	23	6	2	1	18
Duluth, Minn.	25	21	3	-	1	-	2
Kansas City, Kans.	36	31	4	1	-	-	1
Kansas City, Mo.	172	134	24	11	1	2	13
Lincoln, Nebr.	47	37	7	3	-	-	7
Minneapolis, Minn.	257	179	35	17	8	18	16
Omaha, Nebr.	99	73	18	7	-	1	9
St. Louis, Mo.	126	95	20	8	-	3	-
St. Paul, Minn.	74	58	8	3	4	1	4
Wichita, Kans.	76	56	11	3	3	3	1

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,408	924	259	153	32	40	126
Atlanta, Ga.	213	133	45	22	4	9	12
Baltimore, Md.	224	129	41	42	8	4	26
Charlotte, N.C.	95	73	18	3	-	1	12
Jacksonville, Fla.	140	98	19	14	5	4	14
Miami, Fla.	102	60	28	10	4	-	-
Norfolk, Va.	51	36	5	6	3	1	5
Richmond, Va.	127	84	28	10	2	3	7
Savannah, Ga.	51	37	11	2	-	1	7
St. Petersburg, Fla.	88	61	16	5	1	5	9
Tampa, Fla.	221	159	33	18	4	7	32
Washington, D.C.	67	32	12	17	1	5	1
Wilmington, Del.	29	22	3	4	-	-	1
E.S. CENTRAL	1,189	851	194	88	38	17	157
Birmingham, Ala.	191	128	36	15	7	5	7
Chattanooga, Tenn.	93	69	13	4	4	3	15
Knoxville, Tenn.	210	169	30	2	7	2	40
Lexington, Ky.	117	70	21	18	7	1	17
Memphis, Tenn.	231	166	32	24	6	3	30
Mobile, Ala.	92	63	17	7	3	2	11
Montgomery, Ala.	72	56	10	6	-	-	5
Nashville, Tenn.	183	130	35	12	4	1	32
W.S. CENTRAL	1,639	1,037	341	150	63	48	131
Austin, Tex.	83	52	15	11	5	-	2
Baton Rouge, La.	77	60	11	4	1	1	5
Corpus Christi, Tex.	46	31	12	1	2	-	2
Dallas, Tex.	239	139	48	30	8	14	11
El Paso, Tex.	99	70	14	9	1	5	8
Ft. Worth, Tex.	145	102	21	12	5	5	16
Houston, Tex.	317	177	70	43	20	7	39
Little Rock, Ark.	72	47	12	8	3	2	8
New Orleans, La.	90	46	27	7	9	1	-
San Antonio, Tex.	276	173	70	18	6	9	24
Shreveport, La.	68	48	13	3	1	3	6
Tulsa, Okla.	127	92	28	4	2	1	10
MOUNTAIN	1,105	765	195	93	30	22	94
Albuquerque, N.M.	113	74	24	14	-	1	3
Colo. Springs, Colo.	69	50	9	6	2	2	13
Denver, Colo.	154	106	25	16	4	3	17
Las Vegas, Nev.	237	149	61	18	5	4	18
Ogden, Utah	19	15	3	-	-	1	3
Phoenix, Ariz.	239	157	40	22	10	10	19
Pueblo, Colo.	24	20	1	1	2	-	2
Salt Lake City, Utah	81	58	11	7	4	1	4
Tucson, Ariz.	169	136	21	9	3	-	15
PACIFIC	1,930	1,308	302	231	50	37	183
Berkeley, Calif.	28	19	5	4	-	-	1
Fresno, Calif.	117	63	24	21	4	4	8
Glendale, Calif.	12	6	6	-	-	-	-
Honolulu, Hawaii	84	54	17	5	5	3	4
Long Beach, Calif.	83	59	9	13	-	2	12
Los Angeles, Calif.	367	248	56	51	9	2	29
Pasadena, Calif.	27	22	3	-	-	2	3
Portland, Oreg.	182	126	24	24	4	4	10
Sacramento, Calif.	213	150	35	21	4	3	29
San Diego, Calif.	145	100	23	13	5	4	25
San Francisco, Calif.	179	112	24	36	4	3	7
San Jose, Calif.	188	133	29	17	3	6	33
Santa Cruz, Calif.	37	23	8	4	-	2	5
Seattle, Wash.	132	88	23	12	8	1	6
Spokane, Wash.	45	35	7	-	2	1	2
Tacoma, Wash.	91	70	9	10	2	-	9
TOTAL	14,347¶	9,637	2,562	1,351	465	329	1,194

*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.
U: Unavailable.

prepared by one catering service for 40 flights operated by the same airline that day. The FDA traceback determined that all of the salad ingredients were of U.S. origin.

Stool specimens obtained from 20 passengers from the index flight were negative on culture for *Salmonella*, *Shigella*, *Campylobacter*, *Yersinia*, and *Vibrio,* and viral particles were not observed in 12 stool specimens examined by electron microscopy at CDC. *E. coli* isolates from 10 ill passengers were tested for ETEC at CDC. ETEC strains (serotype O6:non-motile [NM]) that produced heat stable (ST) and heat labile (LT) toxins were identified in isolates from three passengers.

FDA inspection of the caterer's facilities did not identify deficiencies in sanitary conditions. In addition, all food handlers denied gastrointestinal illness or recent travel outside the United States. Samples of food collected for culture on March 27 did not yield ETEC.

New Hampshire

On April 5, the New Hampshire Division of Public Health Services was notified of gastrointestinal illness in eight persons who ate a buffet dinner served at a mountain lodge on March 31. A total of 202 persons ate the dinner, including 132 guests and 70 lodge employees. A case was defined as diarrhea (three or more loose or watery stools in a 24-hour period) and one other symptom (cramps, fever, headache, nausea, or vomiting) with onset from April 1 through April 7 in a guest or employee who had eaten the dinner. Of the 123 guests and 56 employees who were interviewed, 96 (78%) and 25 (45%), respectively, had illness that met the case definition. Additional symptoms included cramps (92%), nausea (59%), myalgias (50%), headache (49%), fever (22%), and vomiting (11%). Illness began a median of 38 hours after foods from the buffet were eaten (range: 3–159 hours); 60 (65%) of 93 persons for whom information was available reported continuing illness 4–6 days after symptom onset.

Illness among guests was most strongly associated with consumption of tabouleh salad (cases occurred in 78 [94%] of 83 guests who ate the tabouleh and 18 [53%] of 34 guests who did not [RR=1.8; 95% CI=1.3–2.5]). Tabouleh was the only food associated with illness among lodge employees (RR=6.4; 95% CI=2.2–18.8). The tabouleh was prepared from onions, carrots, zucchini, peppers, broccoli, mushrooms, green onions, tomatoes, parsley, bulgur wheat, olive oil, lemon juice, and bottled garlic. All of the produce was of U.S. origin. The salad was prepared the evening before the banquet. All food preparers denied gastrointestinal illness or travel outside the United States the week before the banquet.

Cultures of stool specimens obtained from 14 persons were negative for *Salmonella*, *Shigella*, *Campylobacter*, and *Yersinia*; neither ova nor parasites were detected in stool specimens from seven ill persons. However, ETEC (serotype O6:NM) that produced LT and ST was isolated from stool specimens from seven of nine ill guests and from one of five well employees. Additional ETEC serotypes also were isolated from six specimens.

Follow-up Investigation

Plasmid profiles of the O6:NM strains from the outbreaks in New Hampshire and Rhode Island were identical but differed from those of 10 other serotype O6:NM ETEC strains from other sources. Carrots were the only item common to the tabouleh salad implicated in New Hampshire and the garden salad implicated in Rhode Island. Carrots used in both salads were grown in the same state; however, a traceback

Escherichia coli — *Continued*

conducted by the New Hampshire Division of Public Health Services in collaboration with FDA and CDC did not identify a single source. FDA is investigating the implicated carrot sales agency in the state where the carrots were grown.

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Editorial Note: Since 1975, 13 outbreaks of ETEC gastroenteritis in the United States have been reported to CDC; four (31%) of these outbreaks, including the two described in this report, occurred in 1993. Although each of the four outbreaks in 1993 and five outbreaks reported previously were foodborne, ETEC outbreaks associated with waterborne and person-to-person transmission have been described (*1,2*). At least one foodborne ETEC outbreak in the United States was attributed to spread from an infected food handler (*3*) and another to imported contaminated food (*4*). However, none of the recent foodborne outbreaks were associated with these sources. Salads containing raw vegetables have been associated with ETEC infection (*5*).

Because ETEC is not detected by standard stool culture methods for *Salmonella*, *Shigella*, *Vibrio*, or other enteric bacterial pathogens and because symptoms of ETEC infection are relatively nonspecific, outbreaks caused by ETEC may be incorrectly attributed to a viral etiology. Watery diarrhea is the predominant symptom of ETEC infection, usually reported by more than 90% of patients (*3–5*). The diarrhea is often accompanied by abdominal cramps and is generally mild, although severe dehydrating diarrhea has been reported (*6*). Two percent to 13% of patients report vomiting (*3–5*).

In contrast to illness caused by ETEC, gastroenteritis from infection with Norwalk virus is usually characterized by vomiting but not by diarrhea (*7*). Because nausea, headache, and myalgias occur with varying frequency in association with ETEC and Norwalk virus infections, these symptoms are less useful for differentiating the two illnesses (*3–5,7*). The incubation periods are similar for ETEC and Norwalk gastroenteritis (range: 24–48 hours) (*2–4,7*). However, duration of illness is shorter for Norwalk gastroenteritis (usually ≤3 days) and longer for illness caused by ETEC infection (often >4 days) (*1–5,7*).

Laboratory identification of ETEC depends on testing *E. coli* isolates by methods that are not widely available. For well characterized outbreaks of watery diarrheal illness for which no pathogen has been identified during routine bacteriologic examinations, arrangements can be made through local and state health departments to send *E. coli* isolates to CDC for testing. ETEC previously has been recognized primarily as a cause of traveler's diarrhea. However, the findings in this report indicate that clinicians and microbiologists may need to consider ETEC in patients with diarrheal illness who did not travel (*8*).

References

1. Rosenberg ML, Koplan JP, Wachsmuth IK, et al. Epidemic diarrhea at Crater Lake from enterotoxigenic *Escherichia coli*: a large waterborne outbreak. Ann Intern Med 1977;86:714–8.
2. Ryder RW, Wachsmuth IK, Buxton AE. Infantile diarrhea produced by heat-stable enterotoxigenic *Escherichia coli*. N Engl J Med 1976;295:849–53.

Escherichia coli — *Continued*

3. Taylor WR, Schell WL, Wells JG, et al. A foodborne outbreak of enterotoxigenic *Escherichia coli* diarrhea. N Engl J Med 1982;306:1093–5.
4. MacDonald KL, Eidson M, Strohmeyer C, et al. A multistate outbreak of gastrointestinal illness caused by enterotoxigenic *Escherichia coli* in imported semisoft cheese. J Infect Dis 1985; 151:716–20.
5. Merson MH, Morris GK, Sack DA, et al. Traveler's diarrhea in Mexico: a prospective study of physicians and family members attending a conference. N Engl J Med 1976;294:1299–305.
6. Sack RB, Gorbach SL, Banwell JG, Jacobs B, Chatterjee BD, Mitra RC. Enterotoxigenic *Escherichia coli* isolated from patients with severe cholera-like disease. J Infect Dis 1971; 123:378–85.
7. Kaplan JE, Gary GW, Baron RC, et al. Epidemiology of Norwalk gastroenteritis and the role of Norwalk virus in outbreaks of acute nonbacterial gastroenteritis. Ann Intern Med 1982; 96:756–61.
8. Osterholm MT, Hedberg CW, MacDonald KL. Prevention and treatment of traveler's diarrhea [Letter]. N Engl J Med 1993;329:1584–5.

Epidemiologic Notes and Reports

Continued Use of Drinking Water Wells Contaminated with Hazardous Chemical Substances — Virgin Islands and Minnesota, 1981–1993

Improperly disposed hazardous chemical substances are a common source for contamination of drinking water wells (*1*). The Agency for Toxic Substances and Disease Registry (ATSDR) and other environmental and public health agencies have recommended that exposure-reduction procedures (i.e., provision of alternative water supplies and construction of new water supplies) be implemented when drinking water wells are contaminated with hazardous substances in concentrations that approach or exceed levels potentially associated with adverse health outcomes in humans (*2*). Once these procedures are implemented, the original wells should not be used as sources for drinking water. This report summarizes two cases in which contaminated drinking water wells were being used even though health advisories had been issued to discontinue use of the wells.

Tutu Well Field, St. Thomas, Virgin Islands

In 1987, the Virgin Islands Department of Planning and Natural Resources (VIDPNR) and the U.S. Environmental Protection Agency (EPA) determined that 22 commercial, residential, and public wells in the Tutu Well Field were contaminated with petrochemical and volatile organic compounds (e.g., benzene; trans-1,2-dichloroethylene; trichloroethylene; and tetrachloroethylene) that originated from several sources. This well field provided drinking water to persons throughout the island, either directly or by water trucked to different parts of the island. An estimated 11,000 persons may have been exposed for approximately 20 years to the volatile organic compounds, which may increase the risk for cancer for those persons.

After all households were disconnected from the contaminated wells, they were provided uncontaminated water (i.e., water trucked in and stored in cisterns) by EPA. During 1987–1988, the contaminated wells were condemned and capped (i.e., the top of the well was secured, but the shaft was left open) by VIDPNR. However, during a

Drinking Water Wells — Continued

1992 site visit, ATSDR and VIDPNR learned that contaminated wells had been reactivated because of water shortages (e.g., the desalinization drinking water plant had operational difficulties) or for economic reasons (*3*). In 1993, the reactivated wells were connected to a treatment system that removes contaminants before residents drink the water. VIDPNR and EPA are conducting investigations to determine how to clean up the contamination.

Arden Hills, Minnesota

During 1981–1982, the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency learned that 41 of 137 private and commercial wells downgradient of an industrial facility were contaminated with trichloroethylene and trichloroethane. In two mobile home park wells (serving approximately 750 residents) and seven residential wells, the contamination was at levels at which persons who relied on those wells for drinking water may be at increased risk for cancer. MDH issued a drinking water advisory requiring that the contaminated wells be closed and that residents be connected to alternative water supplies. The groundwater contamination is being remedied by a series of pumping and treatment systems at and near the industrial facility (*4*).

In 1983, a new well and distribution line were constructed to replace the two contaminated wells at the mobile home park; the new well tapped a deeper uncontaminated aquifer. After the new well was constructed, the old contaminated wells were capped. However, without notifying state or county health officials, the owner had continued to maintain one of the contaminated wells as an emergency backup well; this well was used intermittently when the newer, uncontaminated well was undergoing maintenance or repair. In 1993, MDH learned that the contaminated well was being used and requested that the well be abandoned according to the requirements of MDH well codes (*4*). MDH is continuing to monitor this situation.

Reported by: C Crooke, Dept of Planning and Natural Resources, Virgin Islands. Div of Health Assessment and Consultation, Agency for Toxic Substances and Disease Registry.

Editorial Note: Contaminated wells and wells that have been inactivated for other reasons should be properly sealed (i.e., by filling the well completely with concrete, cement grout, neat cement, or clays) and abandoned (*5*) after an alternative water supply has been substituted. ATSDR does not recommend maintaining inactive residential wells for a long-term (i.e., more than 2 years) groundwater monitoring program because 1) detailed information about the wells (e.g., depth of well and depth and thickness of the well screen) needed to monitor groundwater usually is not available and 2) the monitoring wells could be reactivated as a drinking water supply before the contamination is remedied. Proper abandonment precludes potential future human exposure to groundwater contaminants from reuse of the contaminated wells. Plugging inactive bored or augured wells also may eliminate a physical hazard for children and prevent the use of such wells for improper disposal of liquid wastes.

Because exposure (inhalation, ingestion, and dermal contact) to concentrations of contaminants can increase the risk of cancer for persons who rely on the wells, in both cases in this report owners of contaminated wells were advised not to use the wells for drinking water. Human exposures to high concentrations of contaminants can occur before such situations are detected by public health officials because residential wells are not routinely monitored. Public health and environmental officials should

Drinking Water Wells — Continued

require the proper closure of contaminated drinking water wells after uncontaminated water supplies have been provided; closure orders should include requirements for properly closing contaminated drinking water wells.

Before old residential wells are used as sources for nonpotable water, users should be informed of the potential for future contamination and the possible public health consequences. To protect potable water systems from cross contamination, ATSDR recommends severing the connections between nonpotable wells and associated residences (i.e., removing the water line from the well to the residence).

References

1. Agency for Toxic Substances and Disease Registry. Biennial report, 1989 and 1990. Atlanta: US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1991.
2. Agency for Toxic Substances and Disease Registry. Public health assessment guidance manual. Atlanta: US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1992.
3. Agency for Toxic Substances and Disease Registry. Preliminary public health assessment for Tutu Well Field, St. Thomas, Virgin Islands. Atlanta: US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1993.
4. Agency for Toxic Substances and Disease Registry. Public health assessment for New Brighton/Arden Hills, Minnesota. Atlanta: US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1993.
5. Driscoll FG. Ground water and wells. 2nd ed. St. Paul: Johnson Filtration Systems, Inc, 1986.

Notice to Readers

Limited Availability of Penicillin G Sodium

On December 17, 1993, Marsam Pharmaceuticals* (Cherry Hill, New Jersey), the sole manufacturer of Penicillin G Sodium, reported that the supplier of the active ingredient ceased production. As a result, inventories of Penicillin G Sodium for Injection may become low or depleted. Penicillin G Sodium is generally used in patients who cannot tolerate Penicillin G Potassium (e.g., patients with renal impairment).

Most patients requiring parenteral penicillin therapy can tolerate Penicillin G Potassium, of which there is no shortage. Acceptable alternative therapy may be available for many patients with renal impairment; however, physicians should evaluate alternatives on a case-by-case basis.

Marsam Pharmaceuticals and the Food and Drug Administration have identified a new manufacturer of the active ingredient, and required testing is in progress. In the interim, Marsam Pharmaceuticals will retain an emergency supply of Penicillin G Sodium. Physicians who have patients for whom no substitute is acceptable should contact Marsam Pharmaceuticals, telephone (800) 883-2600.

Reported by: Office of Generic Drugs, Center for Drug Evaluation and Research, Food and Drug Administration.

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*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

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