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International Notes

Dengue Type 3 Infection — Nicaragua and Panama, October–November 1994

The geographic range and incidence of dengue virus activity in the Americas substantially increased from 1980 to 1994. During this period, all dengue activity in the Americas was associated with dengue serotypes 1, 2, and 4 (DEN-1, DEN-2, and DEN-4). On November 25, 1994, the Ministry of Health of Nicaragua announced the isolation of dengue type 3 (DEN-3) from two children hospitalized with minor hemorrhagic manifestations in Managua. Subsequently, DEN-3 virus was isolated from two persons with dengue fever in Panama. These cases represent the first isolation of DEN-3 from autochthonous cases in the Americas since 1977. This report describes these cases and dengue activity in Nicaragua and Panama and summarizes public health activities to control dengue fever in the Americas.

On October 22, 1994, a 5-year-old boy was hospitalized in Managua with symptoms of classic dengue fever (i.e., fever, vomiting, and rash). On October 23, a 10-year-old girl from Managua was hospitalized with similar symptoms. Both children had an uneventful clinical course and recovered. DEN-3 virus was isolated and reisolated (for confirmation) from blood samples from both patients by the Pedro Kourí Institute of Tropical Medicine in Havana. Serologic analyses confirmed that both were primary dengue infections.

DEN-3 virus also was isolated from blood samples of two patients with symptoms of dengue fever in Panama by the Gorgas Memorial Laboratory in Panama City. The first case occurred in the province of Chiriquí (sample collected on October 11) and the second, in the province of Panama (sample collected on November 14). Genetic typing of the initial DEN-3 isolate from Panama at CDC indicated the virus belongs to the Sri Lanka/India genotype, which caused major dengue hemorrhagic fever (DHF) epidemics in Sri Lanka and India during 1989–1992.

During 1994, a countrywide dengue epidemic occurred in Nicaragua (1994 estimated population: 4,300,000). A total of 20,469 dengue cases (4.8 per 1000 population) was reported: the attack rate was highest in the province of León (11.9 cases per 1000); the largest number of cases (7631; attack rate: 6.4 per 1000) was reported in Managua. The National Diagnostic and Reference Center documented probable dengue infection

Dengue — Continued

(i.e., presence of antiflavivirus immunoglobulin M) in patients from 15 (83%) of the 18 health-care regions. Of the 20,469 reported cases, 1247 (6.1%) had hemorrhagic manifestations; 900 (4.4%) patients were hospitalized. Reviews of medical records at two hospitals indicated that 35 (5.2%) of 676 hospitalized patients met the diagnostic criteria for dengue hemorrhagic fever (DHF). Six cases of suspected DHF were fatal.

In October and November, as the result of increased dengue transmission in Managua, the Ministry of Health initiated a multifaceted response to control *Aedes aegypti*, the mosquito vector of dengue. This response included ultralow-volume application of insecticides (deltamethrin or cypermethrin); indoor application of mosquito larvicide (temephos [Abate®*]); and a national, community-based campaign to eliminate mosquito production sites. These activities were supported by efforts to educate the community. By the end of November, the weekly number of reported cases decreased substantially. In late November, an international team sponsored by the Pan American Health Organization (PAHO) traveled to Nicaragua to reinforce laboratory diagnostic capabilities, obtain epidemiologic information, evaluate the severity of disease produced by DEN-3, and assist national authorities in their efforts to control the outbreak.

An outbreak of dengue, which began in July 1994, also occurred in Panama; DEN-1 was the predominant virus serotype isolated. As of December 28, a total of 716 laboratory-diagnosed cases originating from eight of the 13 provinces (attack rate: 27.4 per 100,000 persons) had been reported.

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Editorial Note: Dengue fever is an acute, mosquito-transmitted viral disease characterized by fever, headache, arthralgia, myalgia, rash, nausea, and vomiting. Infections are caused by any of the four virus serotypes. Although most dengue infections result in relatively mild illness, some can produce DHF. Based on the World Health Organization case definition (*1*), a case of DHF must meet the following criteria: 1) fever, 2) minor or major hemorrhagic manifestations, 3) thrombocytopenia ($\leq$100,000/mm^3), and 4) objective evidence of increased capillary permeability (e.g., hemoconcentration [hematocrit increased by $\geq$20%], pleural effusions [evidenced by chest radiography or other imaging method], or hypoproteinemia). A case of dengue shock syndrome (DSS) must meet all the criteria for DHF plus hypotension or narrow pulse pressure ($\leq$20 mm Hg); the fatality rate for patients with DSS can be as high as 44% (*2*).

In 1994, outbreaks of dengue were reported from Brazil, Costa Rica, Dominican Republic, Haiti, Mexico, Puerto Rico, and Venezuela. In Nicaragua, an outbreak in 1992 was localized in León province and associated with DEN-2 and DEN-4 viruses; an outbreak in June and July 1993 was focused in León and adjacent Chinandega province, but no virus was isolated. A limited outbreak of DEN-2 (14 laboratory-confirmed

*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.

Dengue — Continued

cases) occurred in Panama City in 1993 and was the first recorded outbreak of dengue in Panama since 1942.

DEN-3 was first isolated in the Americas (in Puerto Rico) in 1963 (*3*) and subsequently caused epidemics in Jamaica and the eastern Caribbean during that year (*4*). Although DEN-3 has been isolated from international travelers returning to the Americas from other geographic regions (*5*), this serotype was last isolated in the region (in Puerto Rico) in 1977 (*6*). The identification of autochthonous transmission of DEN-3 in two countries in the Americas (Nicaragua and Panama) in 1994 has important implications for public health because most residents of urban areas in the American tropics are susceptible to this serotype. In particular, all persons in the American tropics who are aged <16 years (approximately one third of the population of Latin America) and all persons living in *Ae. aegypti*-infested areas who were not infected with DEN-3 during 1963–1978 are at risk for infection with this virus. The appearance of DEN-3 also may increase the risk for DHF resulting from secondary, heterotypic infection (*7*) or from the introduction of a particularly virulent genotype of DEN-3 (*8*).

The international response to the outbreak in Nicaragua was specified by a contingency plan developed by health agencies in 1993 to address the potential for reintroduction of DEN-3 into the Americas. This plan highlighted the importance of effective, laboratory-based surveillance programs for dengue and DHF in the Americas. Because of increased DEN-3 activity in other regions and repeated detection of DEN-3 in travelers returning to the Americas, PAHO alerted member countries of these events during April–May 1994 and recommended actions to follow after the identification of an autochthonous case of DEN-3. These actions include prompt investigation to define the magnitude and distribution of the DEN-3 virus in the country and, if the distribution is determined to be limited and circumscribed, efforts to eradicate mosquitoes in the affected area.

PAHO recently published a document for the prevention and control of dengue in the Americas (*9*), which includes a detailed emergency plan for the control of epidemic dengue and DHF. During 1992–1994, these guidelines were presented by PAHO to national representatives of *Ae. aegypti*-infested countries in the Americas. In addition, during 1994, PAHO teams reviewed national dengue-control programs in selected countries and assisted national authorities in preparing or updating contingency plans for outbreaks.

Health-care providers should consider dengue in the differential diagnosis of all patients who have symptoms compatible with dengue and who reside in or have visited any tropical areas. When dengue is suspected, the patient's blood pressure, hematocrit, and platelet count should be monitored for evidence of hypotension, hemoconcentration, and thrombocytopenia. Acetaminophen products are recommended for management of fever because of the anticoagulant properties of acetylsalicylic acid (i.e., aspirin). Acute- and convalescent-phase serum samples should be obtained for viral isolation and serodiagnosis.

Suspected dengue cases should be reported to the state or territorial health department; the report should include a clinical summary, dates of onset of illness and blood collection, and other epidemiologic information (e.g., a detailed travel history with dates and location of travel). Serum samples should be sent for confirmation through state health department laboratories to CDC's Dengue Branch, Division of Vector-

Dengue — Continued

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References

1. World Health Organization. Dengue hemorrhagic fever: diagnosis, treatment, and control. Geneva: World Health Organization, 1986.
2. Tassniyom S, Vasanawathana S, Chirawatkul A, Rojanasuphot S. Failure of high-dose methylprednisolone in established dengue shock syndrome: a placebo-controlled, double-blind study. Pediatrics 1993;92:111–5.
3. Russell PK, Buescher EL, McCown JM, Ordoñez J. Recovery of dengue viruses from patients during epidemics in Puerto Rico and East Pakistan. Am J Trop Med Hyg 1966;15:573–9.
4. Ehrenkranz NJ, Ventura AK, Cuadrado RR, Pond WL, Porter JE. Pandemic dengue in Caribbean countries and the southern United States: past, present, and potential problems. N Engl J Med 1971;285:1460–9.
5. Rigau-Pérez JG, Gubler DJ, Vorndam AV, Clark GG. Dengue surveillance—United States, 1986–1992. In: CDC surveillance summaries (July). MMWR 1994;43(no. SS-2):7–19.
6. Gubler DJ. Dengue and dengue hemorrhagic fever in the Americas. P R Health Sci J 1987;6: 107–11.
7. Halstead SB. Pathogenesis of dengue: challenges to molecular biology. Science 1988;239: 476–81.
8. Lanciotti RS, Lewis JG, Gubler DJ, Trent DW. Molecular evolution and epidemiology of DEN-3 virus. J Gen Virol 1994;75:65–75.
9. Pan American Health Organization. Dengue and dengue hemorrhagic fever in the Americas: guidelines for prevention and control of dengue and dengue hemorrhagic fever in the Americas. Washington, DC: Pan American Health Organization, 1994; scientific publication no. 548.

Health Objectives for the Nation

Race-Specific Differences in Influenza Vaccination Levels Among Medicare Beneficiaries — United States, 1993

One national health objective for the year 2000 is to provide annual influenza vaccination to 60% of all noninstitutionalized, high-risk populations in the United States, (objective 20.11) (*1*). Since May 1, 1993, Medicare has reimbursed providers for the cost of influenza vaccine; reimbursement for the administration of the vaccine also has been provided for beneficiaries with part B coverage, which allows them to receive the vaccine without a copayment and without having to meet the annual deductible amount for part B reimbursement. Approximately 96% of all persons aged ≥65 years in the United States have Medicare part B coverage (Health Care Financing Administration [HCFA], unpublished data, 1994). To characterize patterns of vaccine use by Medicare beneficiaries, HCFA and CDC estimated influenza vaccine use by Medicare beneficiaries during September–December 1993. Because of disparities in vaccine use by race, this analysis focused on race-specific differences between blacks and whites. This report presents the findings of that analysis.

Claims submitted for services provided during September 1–December 31, 1993, and paid by Medicare were used to identify persons who received influenza vaccine. The percentage of beneficiaries who received Medicare-paid vaccinations was calculated using the HCFA 1993 denominator file for beneficiaries aged ≥65 years for the United States and for each state and county, by sex, 10-year age group, and race

Influenza Vaccination Levels — Continued

(white and black [data for racial groups other than whites and blacks are grouped together in the Medicare claims data system and were not analyzed separately]) (Tables 1 and 2). Medicare claims are not submitted by managed-care plans; therefore, beneficiaries who are members of such plans (approximately 6% of the Medicare population) were excluded from the analysis. Because 1993 was the first year influenza vaccination was reimbursed by Medicare, approximately 10%–20% of Medicare beneficiaries may have been vaccinated in 1993 and not had claims filed with Medicare (CDC, unpublished data, 1994).

During 1993, a total of 9,831,884 (35%) beneficiaries received Medicare-reimbursed influenza vaccinations. However, the vaccination rate for blacks (17%) was less than half that for whites (37%) (Table 1). Among whites, the vaccination rate for women aged ≥85 years (30%) was lower than that for women aged 65–84 years by approximately eight percentage points and lower than that for men aged ≥85 years by

TABLE 1. Number and rate of influenza vaccinations paid for by Medicare part B, by recipient age, sex, and race — United States, 1993

Race*/Sex/ Age group (yrs)	No. non-HMO† part B enrollees	No. Medicare-paid influenza vaccinations	Medicare-paid vaccination rate
WHITE			
Men			
65–74	5,483,480	1,883,175	34%
75–84	3,404,559	1,367,802	40%
≥85	844,735	291,706	35%
Total	**9,732,774**	**3,542,683**	**36%**
Women			
65–74	6,882,485	2,556,524	37%
75–84	5,561,678	2,136,587	38%
≥85	2,256,534	684,299	30%
Total	**14,700,697**	**5,377,410**	**37%**
Overall			
65–74	12,365,965	4,439,699	36%
75–84	8,966,237	3,504,389	39%
≥85	3,101,269	976,005	31%
Total	**24,433,471**	**8,920,093**	**37%**
BLACK			
Men			
65–74	456,776	64,127	14%
75–84	251,261	43,612	17%
≥85	68,566	10,990	16%
Total	**776,603**	**118,729**	**15%**
Women			
65–74	655,873	118,960	18%
75–84	467,096	92,067	20%
≥85	187,636	31,590	17%
Total	**1,310,605**	**242,617**	**19%**
Overall			
65–74	1,112,649	183,087	16%
75–84	718,357	135,679	19%
≥85	256,202	42,580	17%
Total	**2,087,208**	**361,346**	**17%**

*Data for racial groups other than whites and blacks are grouped together in the Medicare claims data system and were not analyzed separately.
†Health maintenance organization.

Influenza Vaccination Levels — Continued

TABLE 2. Rates of influenza vaccination paid for by Medicare, by state and race* of recipient — United States, 1993

State	Race			State	Race		
	White	Black	Total†		White	Black	Total†
Alabama	39	19	**35**	Montana	48	35	**48**
Alaska	19	18	**16**	Nebraska	46	22	**45**
Arizona§	44	22	**42**	Nevada	23	15	**23**
Arkansas	46	24	**44**	New Hampshire	35	28	**34**
California§	28	15	**26**	New Jersey§	27	16	**26**
Colorado	47	21	**46**	New Mexico	28	14	**27**
Connecticut	35	22	**35**	New York	34	13	**31**
Delaware	32	17	**30**	North Carolina	41	18	**37**
District of Columbia	32	14	**20**	North Dakota	41	28	**41**
Florida	41	18	**40**	Ohio	36	21	**35**
Georgia	38	16	**33**	Oklahoma	39	18	**38**
Hawaii	34	24	**36**	Oregon	46	25	**45**
Idaho	47	31	**46**	Pennsylvania	40	22	**38**
Illinois	31	11	**29**	Rhode Island	41	27	**40**
Indiana	42	19	**41**	South Carolina§	36	18	**32**
Iowa	49	27	**49**	South Dakota	41	32	**40**
Kansas	46	21	**45**	Tennessee	46	21	**43**
Kentucky	35	21	**34**	Texas	34	15	**32**
Louisiana	29	14	**26**	Utah	34	20	**34**
Maine	42	31	**42**	Vermont	34	33	**33**
Maryland	37	17	**34**	Virginia	45	24	**41**
Massachusetts	18	9	**17**	Washington	42	24	**42**
Michigan	33	18	**32**	West Virginia	29	19	**29**
Minnesota	43	26	**43**	Wisconsin	45	27	**45**
Mississippi	27	15	**24**	Wyoming	29	24	**29**
Missouri	36	16	**34**	**Total**	**37**	**17**	**35**

*Data for racial groups other than whites and blacks are grouped together in the Medicare claims data system and were not analyzed separately.
†Includes persons in all racial groups and persons of unknown race.
§After the mailing of the original estimates from the Medicare claims data to the 63 federal vaccination grant programs, California and South Carolina reported 473,062 and 23,322 influenza vaccinations administered to persons aged ≥65 years, respectively, which were not billed to Medicare in 1993. Arizona estimated that an additional 40,000 persons received vaccine that was not billed to Medicare, and New Jersey estimated 80,000–100,000 doses were not billed. This additional information is not reflected in the table.

approximately five percentage points ($p<0.01$ for both comparisons). Among blacks, vaccination rates varied 1%–3% between different age-sex groups (Table 1).

Coverage rates for Medicare-reimbursed influenza vaccination ranged from 16% (Alaska) to 49% (Iowa) (Table 2). Vaccination levels were ≥40% in 20 (40%) of the 50 states and in the District of Columbia. In 33 (66%) states and in the District of Columbia, vaccination rates for blacks were below 60% of the rates for whites. Vaccination rates for blacks were at least 60% of the rates for whites in 17 states*; in these states, the total black population aged ≥65 years with Medicare part B coverage was 65,515 (3% of the national black population that has Medicare part B coverage).

*Alaska, Connecticut, Hawaii, Idaho, Kentucky, Maine, Minnesota, Montana, Nevada, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont, West Virginia, Wisconsin, and Wyoming.

Influenza Vaccination Levels — Continued

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Editorial Note: The findings in this report are consistent with previous surveys that have documented lower influenza vaccination coverage among blacks than whites. For example, based on the 1991 National Health Interview Survey, among all persons aged ≥65 years, 41% had been vaccinated; however, within this age group, blacks were less likely than whites to have been vaccinated (27% and 43%, respectively) (*2*). Findings from the Medicare Current Beneficiary Survey (September–December 1992) indicated that, for noninstitutionalized beneficiaries, the vaccination rate during winter 1991–92 was 48% overall but 29% among blacks and 50% among whites (Office of the Actuary, HCFA, unpublished data, 1994). These variations may reflect differences in factors such as socioeconomic status, access to medical care, and prevalence of specific risks.

The finding in this report that ≥40% of beneficiaries in 20 states and the District of Columbia had received vaccine indicates that, in these areas, substantial progress has been made toward achieving the national health objective for the year 2000 (*1,3*). Because the wide variations in state-specific vaccination levels (Table 2) also have been documented for Medicare-reimbursed pneumococcal vaccination claims (*4*), analysis of these variations may assist in planning programs for increasing vaccine coverage.

Because not all providers submitted claims to Medicare for reimbursement, the rates for Medicare-reimbursed influenza vaccination claims in this report are lower than those based on other national surveys. However, failure to submit claims to Medicare in 1993 for influenza vaccination services is not known to have differentially affected claims submitted for vaccinations administered to black beneficiaries compared with white beneficiaries. In the future, reporting may be enhanced through communication with public and private providers; the use of simplified billing procedures; and helping public-sector providers, visiting nurse groups, and others obtain Medicare provider numbers (*5*).

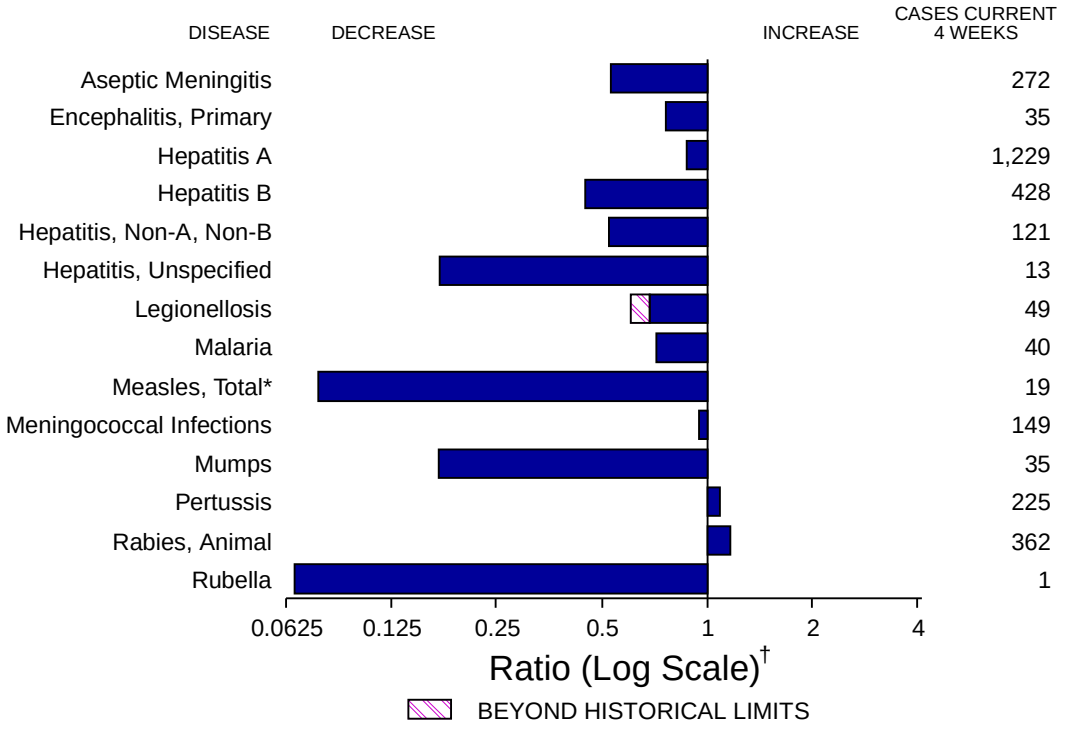
HCFA is collaborating with a coalition representing approximately 160 community organizations to identify strategies to improve coverage in 1995. In addition, as part of HCFA's Consumer Information Strategy (*6*), demographic- and county-specific vaccination rates for 1993 (*7*) were provided to health-care providers; consumer-based organizations; local, state, and other federal agencies; and Medicare beneficiaries. This information should assist in increasing beneficiary use of influenza vaccine and addresses consumer and provider concerns about the risks for influenza and the effectiveness and safety of influenza vaccine (*8–10*). The county-specific vaccination rates also may assist programs receiving federal childhood vaccination grants to improve influenza vaccination coverage.

References

1. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991:122–3; DHHS publication no. (PHS)91-50213.
2. Heath KA, Strikas RA, Stevenson J, Williams WW. Influenza and pneumococcal vaccination among older adults: results of the 1991 National Health Interview Survey [Abstract]. In: Program and abstracts of the CDC Epidemic Intelligence Service 43rd annual conference. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1994:33.

(Continued on page 33)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending January 14, 1995, with historical data — United States



*The large apparent decrease in the number of reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.
†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 January 14, 1995 (2nd Week)

	Cum. 1995		Cum. 1995
Anthrax	-	Plague	-
Aseptic Meningitis	79	Poliomyelitis, Paralytic†	-
Brucellosis	5	Psittacosis	-
Cholera	-	Rabies, human	-
Congenital rubella syndrome	-	Rocky Mountain Spotted Fever	2
Diphtheria	-	Syphilis, congenital, age < 1 year§	-
Encephalitis, primary	6	Tetanus	-
Encephalitis, post-infectious	1	Toxic shock syndrome	4
*Haemophilus influenzae**	34	Trichinosis	-
Hansen Disease	-	Tularemia	-
Hepatitis, unspecified	2	Typhoid fever	10
Leptospirosis	2		

*Of 34 cases of known age, 8 (24%) were reported among children less than 5 years of age.
†Updated quarterly from reports to the Division of Sexually Transmitted Diseases and HIV Prevention, National Center for Prevention Services. First quarter data not yet available.
-: no reported cases

TABLE II. Cases of selected notifiable diseases, United States, weeks ending January 14, 1995, and January 15, 1994 (2nd Week)

Reporting Area	AIDS*	Gonorrhea		Hepatitis (Viral), by type						Legionellosis	
				A		B		NA,NB			
	Cum. 1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	-	8,911	14,305	370	677	97	340	32	154	17	57
NEW ENGLAND	-	154	309	5	13	2	13	-	7	-	1
Maine	-	1	2	-	-	-	-	-	-	-	-
N.H.	-	1	-	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-	-	-	-
Mass.	-	135	127	1	7	1	8	-	2	-	-
R.I.	-	17	19	2	6	1	2	-	5	-	1
Conn.	-	-	161	2	-	-	3	-	-	-	-
MID. ATLANTIC	-	276	1,116	1	57	2	53	6	14	-	2
Upstate N.Y.	-	-	-	-	4	2	1	6	2	-	-
N.Y. City	-	-	948	-	31	-	19	-	-	-	-
N.J.	-	26	24	-	14	-	21	-	8	-	1
Pa.	-	250	144	1	8	-	12	-	4	-	1
E.N. CENTRAL	-	2,840	3,380	100	80	15	72	8	21	7	25
Ohio	-	1,155	1,330	78	12	2	7	1	-	7	6
Ind.	-	60	319	2	16	2	19	-	1	-	9
Ill.	-	662	806	-	36	-	17	-	4	-	4
Mich.	-	921	622	20	7	11	18	7	16	-	5
Wis.	-	42	303	-	9	-	11	-	-	-	1
W.N. CENTRAL	-	479	697	6	35	2	20	1	-	2	5
Minn.	-	110	112	1	1	-	-	-	-	-	-
Iowa	-	75	34	3	1	2	2	1	-	2	3
Mo.	-	164	386	-	23	-	18	-	-	-	-
N. Dak.	-	-	1	-	-	-	-	-	-	-	-
S. Dak.	-	1	1	-	-	-	-	-	-	-	-
Nebr.	-	-	5	-	8	-	-	-	-	-	1
Kans.	-	129	158	2	2	-	-	-	-	-	1
S. ATLANTIC	-	3,743	3,941	12	17	21	38	7	14	3	2
Del.	-	81	51	-	-	1	1	-	-	-	-
Md.	-	567	506	7	6	3	10	2	2	-	-
D.C.	-	149	362	-	3	5	2	-	-	-	-
Va.	-	195	672	-	-	-	-	-	-	-	-
W. Va.	-	53	17	1	1	2	-	1	1	1	-
N.C.	-	540	1,165	1	1	7	20	3	6	2	1
S.C.	-	380	500	-	3	1	-	-	-	-	1
Ga.	-	1,050	-	-	1	-	2	-	4	-	-
Fla.	-	728	668	3	2	2	3	1	1	-	-
E.S. CENTRAL	-	300	1,394	6	103	7	62	-	58	1	17
Ky.	-	15	190	5	14	3	11	-	3	-	-
Tenn.	-	-	411	-	6	4	45	-	55	-	2
Ala.	-	-	384	-	5	-	6	-	-	-	-
Miss.	-	285	409	1	78	-	-	-	-	1	15
W.S. CENTRAL	-	494	1,449	10	4	5	10	1	4	-	1
Ark.	-	-	220	-	-	-	-	-	-	-	-
La.	-	494	711	-	-	-	-	-	-	-	-
Okla.	-	-	5	7	4	5	10	1	4	-	1
Tex.	-	-	513	3	-	-	-	-	-	-	-
MOUNTAIN	-	198	307	89	90	13	12	2	18	-	4
Mont.	-	-	15	2	-	1	-	1	-	-	1
Idaho	-	2	1	3	3	1	-	-	5	-	-
Wyo.	-	3	1	-	-	-	-	-	2	-	-
Colo.	-	104	160	40	9	5	2	1	6	-	1
N. Mex.	-	11	38	39	33	6	7	-	1	-	1
Ariz.	-	77	18	1	44	-	1	-	-	-	-
Utah	-	1	8	4	1	-	1	-	2	-	-
Nev.	-	-	66	-	-	-	1	-	2	-	1
PACIFIC	-	427	1,712	141	278	30	60	7	18	4	-
Wash.	-	-	139	-	18	-	3	-	1	-	-
Oreg.	-	-	44	17	9	1	1	-	-	-	-
Calif.	-	392	1,471	120	243	29	51	7	15	2	-
Alaska	-	22	25	1	5	-	-	-	-	-	-
Hawaii	-	13	33	3	3	-	5	-	2	2	-
Guam	-	-	3	-	-	-	-	-	-	-	-
P.R.	-	18	23	-	-	-	-	-	-	-	-
V.I.	-	-	2	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	1	-	1	-	-	-	-	-	-
C.N.M.I.	-	-	4	-	-	-	-	-	-	-	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS, National Center for Infectious Diseases.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending January 14, 1995, and January 15, 1994 (2nd Week)

Reporting Area	Lyme		Malaria		Measles (Rubeola)						Meningococcal Infections		Mumps	
					Indigenous		Imported*		Total					
	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	1995	Cum. 1995	1995	Cum. 1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	32	125	10	16	-	4	-	-	4	1	57	153	11	34
NEW ENGLAND	3	6	3	3	-	2	-	-	2	-	4	9	-	1
Maine	-	-	-	-	-	-	-	-	-	-	-	1	-	-
N.H.	-	1	-	-	-	-	-	-	-	-	-	1	-	1
Vt.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	3	-	1	-	-	-	-	-	-	-	4	3	-	-
R.I.	-	3	2	3	-	2	-	-	2	-	-	-	-	-
Conn.	-	2	-	-	-	-	-	-	-	-	-	4	-	-
MID. ATLANTIC	20	111	-	4	-	-	-	-	-	1	2	8	-	2
Upstate N.Y.	-	83	-	-	-	-	-	-	-	-	2	1	-	-
N.Y. City	-	8	-	1	-	-	-	-	-	-	-	-	-	-
N.J.	-	16	-	2	-	-	-	-	-	1	-	4	-	-
Pa.	20	4	-	1	U	-	U	-	-	-	-	3	-	2
E.N. CENTRAL	3	-	1	3	-	-	-	-	-	-	12	33	6	10
Ohio	3	-	-	-	-	-	-	-	-	-	4	2	2	-
Ind.	-	-	-	-	U	-	U	-	-	-	1	8	-	-
Ill.	-	-	-	2	-	-	-	-	-	-	6	11	-	7
Mich.	-	-	1	1	-	-	-	-	-	-	1	5	4	3
Wis.	-	-	-	-	-	-	-	-	-	-	-	7	-	-
W.N. CENTRAL	2	1	-	1	-	-	-	-	-	-	3	7	2	2
Minn.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	-	-	-	1	-	-	-	-	-	-	3	-	1	-
Mo.	-	-	-	-	-	-	-	-	-	-	-	7	1	2
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	2	1	-	-	-	-	-	-	-	-	-	-	-	-
S. ATLANTIC	3	2	1	1	-	-	-	-	-	-	13	14	-	2
Del.	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Md.	-	-	-	-	-	-	-	-	-	-	-	2	-	-
D.C.	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Va.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W. Va.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N.C.	2	-	1	1	-	-	-	-	-	-	3	3	-	1
S.C.	1	-	-	-	-	-	-	-	-	-	1	-	-	1
Ga.	-	-	-	-	-	-	-	-	-	-	-	4	-	-
Fla.	-	-	-	-	-	-	-	-	-	-	8	4	-	-
E.S. CENTRAL	-	4	-	1	-	-	-	-	-	-	1	51	-	8
Ky.	-	4	-	-	-	-	-	-	-	-	1	3	-	-
Tenn.	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Ala.	-	-	-	-	U	-	U	-	-	-	-	9	-	-
Miss.	-	-	-	1	-	-	-	-	-	-	-	37	-	8
W.S. CENTRAL	-	-	-	-	-	-	-	-	-	-	3	1	-	-
Ark.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Tex.	-	-	-	-	-	-	-	-	-	-	2	-	-	-
MOUNTAIN	-	-	1	-	-	2	-	-	2	-	10	10	-	-
Mont.	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Idaho	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	-	-	1	-	-	-	-	-	-	-	-	1	-	-
N. Mex.	-	-	-	-	-	2	-	-	2	-	4	1	N	N
Ariz.	-	-	-	-	-	-	-	-	-	-	5	4	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	U	-	U	-	-	-	-	2	-	-
PACIFIC	1	1	4	3	-	-	-	-	-	-	9	20	3	9
Wash.	-	-	-	-	-	-	-	-	-	-	2	1	-	1
Oreg.	-	-	-	-	-	-	-	-	-	-	1	1	N	N
Calif.	1	1	3	2	-	-	-	-	-	-	5	18	3	6
Alaska	-	-	1	-	-	-	-	-	-	-	-	-	-	2
Hawaii	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Guam	-	-	-	-	U	-	U	-	-	-	-	-	-	-
P.R.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V.I.	-	-	-	-	U	-	U	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	U	-	U	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	1	U	-	U	-	-	9	-	-	-	-

*For imported measles, cases include only those resulting from importation from other countries.
N: Not notifiable U: Unavailable -: no reported cases

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending January 14, 1995, and January 15, 1994 (2nd Week)

Reporting Area	Pertussis			Rubella			Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal	
	1995	Cum. 1995	Cum. 1994	1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	58	66	163	-	-	1	305	730	283	754	127	160
NEW ENGLAND	5	5	5	-	-	-	5	9	2	4	43	47
Maine	4	4	-	-	-	-	-	-	-	-	-	-
N.H.	-	-	3	-	-	-	-	-	-	-	3	3
Vt.	-	-	2	-	-	-	-	-	-	-	3	2
Mass.	1	1	-	-	-	-	3	3	-	-	25	24
R.I.	-	-	-	-	-	-	-	-	2	-	-	1
Conn.	-	-	-	-	-	-	2	6	-	4	12	17
MID. ATLANTIC	-	-	37	-	-	1	1	46	22	21	37	53
Upstate N.Y.	-	-	-	-	-	1	-	-	-	1	23	33
N.Y. City	-	-	-	-	-	-	-	42	22	19	-	-
N.J.	-	-	2	-	-	-	-	1	-	-	12	11
Pa.	U	-	35	U	-	-	1	3	-	1	2	9
E.N. CENTRAL	7	9	45	-	-	-	52	71	34	41	1	1
Ohio	5	5	15	-	-	-	17	9	9	8	1	-
Ind.	U	-	-	U	-	-	3	11	1	1	-	-
Ill.	-	-	16	-	-	-	27	30	23	32	-	-
Mich.	2	4	3	-	-	-	5	9	-	-	-	-
Wis.	-	-	11	-	-	-	-	12	1	-	-	1
W.N. CENTRAL	3	4	6	-	-	-	16	52	7	1	3	5
Minn.	-	-	-	-	-	-	3	3	-	-	-	-
Iowa	-	-	-	-	-	-	3	2	2	-	2	2
Mo.	-	1	1	-	-	-	10	47	1	-	-	-
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	3	3	5	-	-	-	-	-	4	1	1	3
S. ATLANTIC	21	21	22	-	-	-	121	167	39	30	30	33
Del.	-	-	-	-	-	-	-	-	-	1	2	-
Md.	-	-	5	-	-	-	13	3	25	9	9	7
D.C.	-	-	-	-	-	-	4	7	1	4	-	-
Va.	-	-	-	-	-	-	7	15	-	-	6	7
W. Va.	-	-	1	-	-	-	-	-	3	-	1	2
N.C.	21	21	12	-	-	-	41	75	3	-	7	1
S.C.	-	-	4	-	-	-	21	20	6	16	2	2
Ga.	-	-	-	-	-	-	20	30	1	-	3	14
Fla.	-	-	-	-	-	-	15	17	-	-	-	-
E.S. CENTRAL	-	-	10	-	-	-	72	166	4	279	8	3
Ky.	-	-	1	-	-	-	-	9	1	-	-	-
Tenn.	-	-	-	-	-	-	-	45	-	4	8	-
Ala.	U	-	1	U	-	-	-	32	-	16	-	3
Miss.	-	-	8	-	-	-	72	80	3	259	-	-
W.S. CENTRAL	-	-	8	-	-	-	35	149	1	-	1	2
Ark.	-	-	-	-	-	-	-	18	-	-	-	1
La.	-	-	-	-	-	-	35	74	-	-	1	-
Okla.	-	-	8	-	-	-	-	-	1	-	-	1
Tex.	-	-	-	-	-	-	-	57	-	-	-	-
MOUNTAIN	22	22	2	-	-	-	3	13	5	19	4	2
Mont.	-	-	-	-	-	-	-	-	-	-	3	-
Idaho	7	7	-	-	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	-	-	1	-	-	-	2	7	-	-	-	-
N. Mex.	-	-	1	-	-	-	-	-	-	-	-	-
Ariz.	15	15	-	-	-	-	1	2	5	17	1	2
Utah	-	-	-	-	-	-	-	1	-	-	-	-
Nev.	U	-	-	U	-	-	-	3	-	2	-	-
PACIFIC	-	5	28	-	-	-	-	57	169	359	-	14
Wash.	-	-	3	-	-	-	-	1	4	4	-	-
Oreg.	-	-	3	-	-	-	-	-	-	4	-	-
Calif.	-	5	21	-	-	-	-	56	158	345	-	10
Alaska	-	-	-	-	-	-	-	-	-	3	-	4
Hawaii	-	-	1	-	-	-	-	-	7	3	-	-
Guam	U	-	-	U	-	-	-	-	-	-	-	-
P.R.	-	-	-	-	-	-	3	13	-	-	1	-
V.I.	U	-	-	U	-	-	-	1	-	-	-	-
Amer. Samoa	U	-	-	U	-	-	-	-	-	-	-	-
C.N.M.I.	U	-	-	U	-	-	-	-	-	6	-	-

U: Unavailable -: no reported cases

TABLE III. Deaths in 121 U.S. cities,* week ending January 14, 1995 (2nd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	580	402	106	47	11	14	45
Boston, Mass.	182	117	35	16	5	9	-
Bridgeport, Conn.	61	42	9	8	1	1	8
Cambridge, Mass.	18	12	5	1	-	-	-
Fall River, Mass.	17	10	3	4	-	-	1
Hartford, Conn.	U	U	U	U	U	U	U
Lowell, Mass.	19	14	4	1	-	-	2
Lynn, Mass.	12	8	1	2	1	-	-
New Bedford, Mass.	23	15	4	4	-	-	2
New Haven, Conn.	46	32	12	1	1	-	4
Providence, R.I.	49	40	5	3	1	-	11
Somerville, Mass.	3	3	-	-	-	-	-
Springfield, Mass.	53	36	14	1	1	1	6
Waterbury, Conn.	40	32	5	3	-	-	6
Worcester, Mass.	57	41	9	3	1	3	5
MID. ATLANTIC	3,267	2,193	574	366	82	52	184
Albany, N.Y.	33	22	3	5	2	1	4
Allentown, Pa.	36	29	4	3	-	-	-
Buffalo, N.Y.	110	94	15	-	-	1	11
Camden, N.J.	40	29	6	3	1	1	4
Elizabeth, N.J.	44	31	8	4	-	1	2
Erie, Pa.§	51	38	9	4	-	-	3
Jersey City, N.J.	44	31	7	4	2	-	2
New York City, N.Y.	1,819	1,166	350	234	41	28	82
Newark, N.J.	80	39	23	13	4	1	7
Paterson, N.J.	39	25	6	5	3	-	3
Philadelphia, Pa.	510	346	82	58	16	8	33
Pittsburgh, Pa.§	77	52	8	10	5	2	4
Reading, Pa.	18	14	2	2	-	-	4
Rochester, N.Y.	153	110	24	10	4	5	8
Schenectady, N.Y.	29	26	3	-	-	-	1
Scranton, Pa.§	30	27	1	2	-	-	1
Syracuse, N.Y.	102	77	16	5	3	1	10
Trenton, N.J.	39	28	4	3	1	3	5
Utica, N.Y.	13	9	3	1	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,432	1,573	452	238	99	68	121
Akron, Ohio	69	58	7	4	-	-	-
Canton, Ohio	45	33	8	3	-	1	6
Chicago, Ill.	438	185	92	84	63	14	11
Cincinnati, Ohio	106	79	15	10	-	2	12
Cleveland, Ohio	184	114	40	24	3	3	2
Columbus, Ohio	249	163	57	14	5	10	21
Dayton, Ohio	129	105	16	7	-	1	14
Detroit, Mich.	298	182	63	34	8	9	7
Evansville, Ind.	37	32	4	1	-	-	2
Fort Wayne, Ind.	3	3	-	-	-	-	-
Gary, Ind.	33	17	9	3	3	1	-
Grand Rapids, Mich.	76	54	13	3	2	4	7
Indianapolis, Ind.	232	158	39	23	5	7	8
Madison, Wis.	60	44	13	3	-	-	2
Milwaukee, Wis.	170	125	29	9	2	5	12
Peoria, Ill.	27	12	4	4	1	6	-
Rockford, Ill.	47	40	6	-	1	-	8
South Bend, Ind.	51	37	9	2	1	2	2
Toledo, Ohio	111	79	18	7	4	3	5
Youngstown, Ohio	67	53	10	3	1	-	2
W.N. CENTRAL	860	630	131	48	21	9	50
Des Moines, Iowa	82	62	15	-	3	2	6
Duluth, Minn.	40	33	6	1	-	-	3
Kansas City, Kans.	26	18	5	2	1	-	1
Kansas City, Mo.	100	57	11	6	3	2	4
Lincoln, Nebr.	35	29	5	1	-	-	1
Minneapolis, Minn.	220	166	34	12	7	1	14
Omaha, Nebr.	104	72	22	7	1	2	4
St. Louis, Mo.	112	80	18	9	4	1	7
St. Paul, Minn.	86	73	8	4	1	-	8
Wichita, Kans.	55	40	7	6	1	1	2
S. ATLANTIC	1,636	1,051	325	177	52	29	117
Atlanta, Ga.	238	134	51	42	7	4	8
Baltimore, Md.	454	291	90	53	15	5	53
Charlotte, N.C.	69	48	10	9	1	1	6
Jacksonville, Fla.	174	118	41	9	2	3	11
Miami, Fla.	73	36	18	16	2	1	-
Norfolk, Va.	61	37	12	7	3	2	6
Richmond, Va.	U	U	U	U	U	U	U
Savannah, Ga.	50	37	7	3	1	2	4
St. Petersburg, Fla.	94	70	15	5	2	2	5
Tampa, Fla.	240	176	42	12	10	-	17
Washington, D.C.	176	101	38	20	8	9	7
Wilmington, Del.	7	3	1	1	1	-	-
E.S. CENTRAL	885	579	190	73	21	22	62
Birmingham, Ala.	164	100	36	15	6	7	4
Chattanooga, Tenn.	86	58	19	8	1	-	6
Knoxville, Tenn.	87	53	21	8	2	3	10
Lexington, Ky.	75	48	18	5	2	2	7
Memphis, Tenn.	142	95	28	13	3	3	18
Mobile, Ala.	129	94	25	7	1	2	9
Montgomery, Ala.	36	23	8	5	-	-	2
Nashville, Tenn.	166	108	35	12	6	5	6
W.S. CENTRAL	1,690	1,095	312	185	48	50	122
Austin, Tex.	92	56	21	14	1	-	4
Baton Rouge, La.	88	61	13	10	1	3	1
Corpus Christi, Tex.	82	50	18	10	2	2	4
Dallas, Tex.	263	167	58	26	6	6	11
El Paso, Tex.	101	76	14	9	2	-	13
Ft. Worth, Tex.	130	84	25	15	5	1	10
Houston, Tex.	341	206	61	54	10	10	42
Little Rock, Ark.	96	58	20	10	4	4	10
New Orleans, La.	70	38	8	9	6	9	-
San Antonio, Tex.	269	183	48	17	8	13	17
Shreveport, La.	35	26	5	3	1	-	3
Tulsa, Okla.	123	90	21	8	2	2	7
MOUNTAIN	986	662	187	87	26	23	76
Albuquerque, N.M.	133	92	24	9	5	3	4
Colo. Springs, Colo.	46	27	14	4	-	1	6
Denver, Colo.	152	99	25	21	1	6	14
Las Vegas, Nev.	177	126	38	11	2	-	16
Ogden, Utah	18	13	-	1	2	2	2
Phoenix, Ariz.	225	130	51	29	12	2	23
Pueblo, Colo.	U	U	U	U	U	U	U
Salt Lake City, Utah	86	61	11	7	4	3	7
Tucson, Ariz.	149	114	24	5	-	6	4
PACIFIC	1,290	869	236	107	19	36	122
Berkeley, Calif.	25	15	6	1	-	2	1
Fresno, Calif.	144	85	32	13	5	9	11
Glendale, Calif.	U	U	U	U	U	U	U
Honolulu, Hawaii	87	49	27	9	1	1	9
Long Beach, Calif.	83	56	17	5	1	4	10
Los Angeles, Calif.	U	U	U	U	U	U	U
Pasadena, Calif.	37	28	4	4	-	1	6
Portland, Oreg.	227	168	31	18	4	6	15
Sacramento, Calif.	U	U	U	U	U	U	U
San Diego, Calif.	U	U	U	U	U	U	U
San Francisco, Calif.	170	99	26	18	2	3	13
San Jose, Calif.	194	139	38	10	3	4	26
Santa Cruz, Calif.	28	24	4	-	-	-	7
Seattle, Wash.	161	111	26	20	2	2	8
Spokane, Wash.	52	37	12	1	-	2	6
Tacoma, Wash.	82	58	13	8	1	2	10
TOTAL	13,626¶	9,054	2,513	1,328	379	303	899

*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.

-: no reported cases.

Influenza Vaccination Levels — Continued

3. Williams WW, Hickson MA, Kane MA, Kendal AP, Spika JS, Hinman AR. Immunization policies and vaccine coverage among adults: the risk for missed opportunities. Ann Intern Med 1988;108:616–25.
4. McBean AM, Babish JD, Prihoda R. The utilization of pneumococcal polysaccharide vaccine among elderly Medicare beneficiaries, 1985 through 1988. Arch Intern Med 1991;151:2009–16.
5. CDC. Implementation of the Medicare influenza vaccination benefit—United States, 1993. MMWR 1994;43:771–3.
6. Vladeck BC. From the Health Care Financing Administration: the consumer information strategy. JAMA 1994;272:196.
7. Health Care Financing Administration. 1993 Influenza immunizations paid for by Medicare: state and county rates. Baltimore: US Department of Health and Human Services, Health Care Financing Administration, 1994.
8. CDC. Adult immunization: knowledge, attitudes, and practices—DeKalb and Fulton counties, Georgia, 1988. MMWR 1988;37:657–61.
9. Fiebach NH, Viscoli CM. Patient acceptance of influenza vaccination. Am J Med 1991;91:393–400.
10. Williams WW. Hawaii pneumococcal disease initiative: surveys of consumer and physician knowledge. In: 26th National Immunization Conference proceedings. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, National Center for Prevention Services, Division of Immunization, 1992;117–22.

International Notes

Type B Botulism Associated with Roasted Eggplant in Oil — Italy, 1993

In August and October 1993, public health officials in Italy were notified of seven cases of type B botulism from two apparently unrelated outbreaks in different communites. Investigations were initiated by the Regional Health Observatory of Campania and the Italian National Institute of Health. This report summarizes the outbreak investigations, which indicated that illness was associated with eating commercially prepared roasted eggplant in oil.

Outbreak 1

On August 14, two waitresses working in a sandwich bar in Santa Maria di Castellabate were admitted to a local hospital with dysphagia, diplopia, and constipation; a clinical diagnosis of botulism was made. On August 12, the waitresses had prepared and eaten ham, cheese, and eggplant sandwiches. A third waitress also ate the sandwiches and developed dyspepsia for which vomiting was induced; she did not have neurologic symptoms. The owner of the bar, who had tasted a small piece of eggplant from the same jar later on August 12, remained asymptomatic. The cook had initially opened the jar of commercially prepared sliced roasted eggplant in oil and had tasted its contents on August 11 and developed diarrhea. Both the cook and the owner reported that the eggplant tasted spoiled.

Botulism was presumptively diagnosed in the two hospitalized patients; both were treated with trivalent botulism antitoxin and gradually improved. No food samples were available for testing. No botulism toxin was detected in the serum of the two hospitalized patients. However, cultures of their stools subsequently yielded type B *Clostridium botulinum*.

Type B Botulism — Continued

Outbreak 2

During October 5–6, four of nine members of an extended family who had dined together on October 2 were hospitalized in Naples with suspected botulism. The meal consisted of green olives, prosciutto, bean salad, green salad, mozzarella cheese, sausages, and commercially prepared roasted eggplant in oil. Based on an investigation and analysis of food histories, the eggplant was implicated as the probable source (relative risk=undefined; $p<0.01$). All of the patients were treated with trivalent botulism antitoxin and gradually improved. Investigation indicated that on September 27, another family member had opened and dipped a fork into the implicated jar of eggplant; although he did not eat any eggplant, he used the fork for other food items. On September 28, he had developed vomiting, dysphagia, and double vision but was not hospitalized; his symptoms resolved spontaneously. On October 8, he was asymptomatic but was hospitalized and treated with trivalent botulism antitoxin after botulism was diagnosed in other family members.

One of the hospitalized patients developed respiratory muscle weakness and required mechanical ventilation. A serum specimen from one patient was negative for botulism toxin. Cultures of stool specimens from three patients yielded proteolytic type B *C. botulinum*. No eggplant was available for testing.

Follow-Up

The commercially prepared eggplant suspected of causing both outbreaks was produced by one company and sold only in Italy. The company reported preparing the eggplant in the following manner: eggplant slices were washed and soaked overnight in a solution of water, vinegar, and salt; roasted in an oven; and subsequently placed in glass jars. Garlic, peppers, oregano, and citric acid were added. The mixtures then were covered with sunflower oil and sealed with screw-on lids; after being filled, the jars were boiled in water for 30 minutes. The pH of the product was not consistently monitored. A total of 119 jars of eggplant from the same lot that caused the outbreaks was tested; neither *C. botulinum* spores nor botulism toxin were detected. The pH of the product varied from 3.9 to 5.1; the pH was >4.6 in 24 (20%) jars tested.

Public health officials issued a national warning and recalled unused jars of eggplant. No additional cases of botulism associated with this product were reported.

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Editorial Note: Foodborne botulism is a paralytic illness caused by the ingestion of botulism toxin, a neurotoxin produced by the ubiquitous spore-forming bacterium *C. botulinum*. Although botulism toxin in food can be destroyed by heating to boiling (212 F [100 C]) for 10 minutes, the spores are heat resistant and can survive prolonged boiling. To destroy *C. botulinum* spores, food must be heated under pressure to temperatures substantially >212 F. Certain environmental conditions, such as absence of oxygen (anaerobic conditions), pH >4.6, warm temperatures (generally >39 F [>4 C]), high moisture content (water activity), and lack of competing bacterial flora promote production of botulism toxin in foods contaminated with *C. botulinum* spores. The

Type B Botulism — Continued

process used to produce the eggplant epidemiologically implicated in the outbreaks in Italy probably failed to remove *C. botulinum* spores and may have provided such conditions.

Covering foods in oil may provide the anaerobic conditions required for the production of botulism toxin. Outbreaks of botulism in the United States and Canada have been caused by covering vegetables with oil or grease. For example, in 1983, onions covered in grease and left overnight on a grill caused a large outbreak of botulism in Illinois (*1*), and commercially processed garlic in oil caused outbreaks in 1985 and 1989 (*2,3*). As a result of these outbreaks, the Food and Drug Administration recommended the addition of antimicrobial growth inhibitors or acidifying agents to such products (*4*).

In Italy, approximately 50 cases of botulism are reported annually (National Institute of Statistics, unpublished data, 1994), compared with approximately 20 cases annually in the United States (CDC, unpublished data, 1994). However, because the clinical and laboratory diagnoses of botulism can be difficult, these counts of incident cases probably underestimate the actual occurrence. In the United States, surveillance for botulism is linked to the release of botulism antitoxin for treatment of suspected cases. CDC maintains supplies of botulism antitoxin at quarantine stations nationwide for rapid release at the request of state health officials who report suspected cases. This centralized system for controlling antitoxin supplies results in reporting of botulism cases and a well-maintained, reliable source of antitoxin; no such system exists in Europe.

In Italy, as in the United States, outbreaks of botulism associated with commercial products are uncommon; most result from eating improperly preserved home-canned foods (National Institute of Statistics, unpublished data, 1994). However, two previous outbreaks in Italy have been linked to commercial products—mushrooms in oil and pickled olives (*5*). The outbreaks described in this report probably resulted from a commercial process that was inadequate to prevent contamination of the final product with *C. botulinum* spores. Another potential explanation is that the jars of eggplant may have been contaminated after they were opened; however, this is less likely because both outbreaks were caused by the same commercial product. Once contaminated with spores, the pH, oil covering, and lack of refrigeration probably provided conditions conducive to the production of botulism toxin. Strict control of the commercial processes used to manufacture such products and the addition of antimicrobial growth inhibitors or acidifying agents could assist in preventing such outbreaks. Persons who prepare roasted vegetables in oil at home should be aware that this practice may be hazardous, especially if such foods are allowed to remain above refrigerator temperature (generally >39 F [>4 C]).

References

1. MacDonald KL, Spengler RF, Hatheway CL, Hargrett NT, Cohen ML. Type A botulism from sauteed onions: clinical and epidemiologic observations. JAMA 1985;253:1275–8.
2. St. Louis ME, Shaun HS, Peck MB. Botulism from chopped garlic: delayed recognition of a major outbreak. Ann Intern Med 1988;108:363–8.
3. Morse DL, Pickard LK, Guzewich JJ, Devine BD, Shayegani M. Garlic-in-oil associated botulism: episode leads to product modification. Am J Public Health 1990;80:1372–3.
4. Food and Drug Administration. Press release no. P89-20. Washington, DC: US Department of Health and Human Services, Public Health Service, Food and Drug Administration, April 17, 1989.

Type B Botulism — Continued

5. Fenicia L, Ferrini AM, Aureli P, Padovan MT. Epidemic of botulism caused by black olives [Italian]. Industrie Alimentari 1992;31:307–8.

Current Trends

Adult Blood Lead Epidemiology and Surveillance — United States, Third Quarter 1994

CDC's National Institute for Occupational Safety and Health (NIOSH) Adult Blood Lead Epidemiology and Surveillance (ABLES) program monitors elevated blood lead levels (BLLs) in adults in the United States. Blood lead data from laboratory reports are transmitted to state-based lead surveillance programs and are compiled by NIOSH for quarterly reporting (*1*).

The total number of elevated blood lead reports during the first three quarters of 1994 increased 18% over third quarter totals from 1993 (Table 1). This increase is consistent with the yearly increase in total reports from 1992 to 1993 (*2*). However, the number of 1994 third quarter reports of higher BLLs (50–59 μg/dL and ≥60 μg/dL) decreased from 1993 to 1994.

Reports of elevated BLLs represent initial reports of newly identified cases or reflect periodic monitoring of known cases or ongoing exposures. The decrease in reports of higher BLLs during 1993–1994 may represent an increase in detection and prevention efforts by industry. Opportunities for prevention include identification of workers with elevated BLLs, reduction of worker exposures, implementation of workplace controls, and/or timely medical removal. The decrease also may have resulted from underreporting of elevated BLLs.

BLL surveillance allows states to respond rapidly to reports of individual elevated BLLs (or workplace-specific clusters) and to conduct appropriate follow-up and prevention activities. Standardization of BLL reporting by states is progressing and helps to identify the magnitude of the problem and trends among U.S. workers. A year

TABLE 1. Reports of elevated blood lead levels (BLLs) among adults — 22 states,* third quarter 1994

Reported BLL (μg/dL)	Third quarter 1994		Cumulative reports, third quarter 1994	Cumulative reports, third quarter 1993§
	No. reports	No. persons†		
25–39	4,637	2,569	13,267	11,261
40–49	1,316	641	4,058	3,163
50–59	233	135	769	788
≥60	86	51	312	411
Total	**6,272**	**3,396**	**18,406**	**15,623**

*Reported by Alabama, Arizona, California, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Washington, and Wisconsin.

†Individual reports are categorized according to the highest reported BLL for a person during the given quarter. Pennsylvania reports only numbers of reports on a quarterly basis; quarterly summaries of numbers of persons do not include Pennsylvania data.

§Data for first quarter 1993 reported from 17 states (Alabama, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, and Wisconsin). Data for second and third quarters 1993 also include reports from Arizona, California, and Washington.

Blood Lead Epidemiology — Continued

2000 national health objective is to eliminate exposures that result in workers having blood lead concentrations >25 μg/dL (baseline: 4804 workers with BLLs >25 μg/dL in seven states in 1988) (objective 10.8) (*3*). Substantial progress is needed to meet this objective.

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References

1. CDC. Surveillance of elevated blood lead levels among adults—United States, 1992. MMWR 1992;41:285–8.
2. CDC. Adult blood lead epidemiology and surveillance—United States, 1992–1994. MMWR 1994;43:483–5.
3. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives—full report, with commentary. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS)91-50212.

Epidemiologic Notes and Reports

Multistate Outbreak of Viral Gastroenteritis Associated with Consumption of Oysters — Apalachicola Bay, Florida, December 1994–January 1995

On January 3, 1995, the Florida Department of Health and Rehabilitative Services (HRS) was notified of an outbreak of acute gastroenteritis associated with eating oysters. The subsequent investigation by HRS has identified 34 separate clusters of cases, many of which were associated with oysters harvested during December 29–31 from 13 Mile Area and Cat Point in Apalachicola Bay. Oysters were shipped to other states, but additional clusters of illness associated with these oysters have been reported only in Georgia. Most of these oysters were served steamed or roasted. This report summarizes the preliminary findings of the ongoing investigation of this outbreak.

On January 4, Apalachicola Bay was closed to harvesting even though levels of fecal coliforms in the water and in the oyster meat were within acceptable limits. The preliminary investigation identified no gross breaches of sanitation; however, during

Viral Gastroenteritis — Continued

the holiday season, the bay was used heavily by recreational boaters and commercial fishermen. Clusters of cases identified since the bay was closed prompted concern regarding the continued marketing of these oysters as unshelled and as shucked product both in Florida and other states.

Following the detection of cases associated with oysters from Apalachicola Bay, enhanced surveillance detected three additional clusters of cases in Florida and two in Texas initially linked to oysters harvested in Galveston Bay. As a result, on January 13, Galveston Bay was closed to harvesting.

Norwalk-like viruses have been detected by electronmicroscopy in stool specimens from seven of 11 persons who ate oysters from Apalachicola Bay.

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Editorial Note: Outbreaks of oyster-associated gastroenteritis affect substantially more persons than those identified in the few documented sentinel clusters (*1–3*). An important feature of these outbreaks is the inherent delays in removing contaminated oysters from the market. Although oyster tags permit traceback to the general harvest areas, they are not sufficiently detailed to allow recall of oysters from a specific site, and they can be lost when oysters are shucked. In this outbreak, the continued occurrence of cases 1 week after the bay was closed and the product was recalled suggests that the contaminated product was still available to consumers. Cooking (i.e., steaming and roasting) did not always render the oysters noninfectious. In addition, enhanced surveillance in Florida prompted by the investigation led to the closing of an oyster bed in Texas. The observation that both the quality of water in the Florida beds and the meat in the implicated oysters met national standards underscores the inherent limitations of the existing methods and the urgent need for improved indicators of viral contamination. In the absence of such indicators, it is difficult to determine when a bed can be safely reopened.

The findings in this investigation indicate the outbreak resulted from consumption of oysters contaminated with Norwalk-like virus. In a previous oyster-associated Norwalk virus outbreak, identification of the identical sequence of the virus genome in specimens from patients in five states established a clear link between those cases and the oysters from one harvest site (*1,2*). For the outbreaks described in this report, molecular analysis of fecal specimens will be required to determine the number of linked outbreaks and help assess the usefulness of the specific control measures (*4,5*). However, the preliminary findings suggest that Apalachicola Bay oysters may have become contaminated by sewage dumped overboard by recreational and commercial boaters. Long-term solutions to eliminate fecal contamination of oyster beds will require either that boaters not be permitted to dump sewage overboard or that beds used for harvesting be limited to those in pristine waters. Improved methods to detect virus in these oysters are needed to understand the extent of the contamination and to strengthen prevention efforts and enforcement.

Viral Gastroenteritis — Continued

References

1. Kohn MA, Farley TA, Ando T, et al. A large outbreak of Norwalk virus gastroenteritis associated with eating raw oysters: implications for maintaining safe oyster beds. JAMA 1995 (in press).
2. Dowell SF, Groves C, Kirkland KB, et al. A multistate outbreak of oyster-associated gastroenteritis: implications for interstate tracing of contaminated shellfish. J Infect Dis 1994 (in press).
3. CDC. Viral gastroenteritis associated with consumption of raw oysters—Florida, 1993. MMWR 1994;43:446–9.
4. Ando T, Monroe SS, Gentsch JR, Jin Q, Lewis DC, Glass RI. Detection and differentiation of antigenically distinct small round-structured viruses (Norwalk-like viruses) by reverse transcription-PCR and Southern hybridization. J Clin Microbiol 1995;33:64–71.
5. Lew JF, LeBaron CW, Glass RI, et al. Recommendations for collection of laboratory specimens associated with outbreaks of gastroenteritis. MMWR 1990;39(no. RR-14).

Notice to Readers

Hospital Epidemiology Course

CDC, the Society for Healthcare Epidemiology of America (SHEA), and the American Hospital Association will cosponsor a hospital epidemiology training course May 6–9, 1995, in San Francisco. The course—designed for infectious disease fellows, hospital epidemiologists, and infection-control practitioners—provides hands-on exercises to improve skills in detection, investigation, and control of epidemiologic problems encountered in the hospital setting and lectures and seminars on fundamental aspects of hospital epidemiology.

Additional information is available from the SHEA Meetings Department, Suite 200, 875 Kings Highway, Woodbury, NJ 08095-3172; telephone (609) 845-1720; fax (609) 853-0411.

Notice to Readers

Publication of Work-Related Lung Disease Surveillance Report

CDC's National Institute for Occupational Safety and Health (NIOSH) has released the *Work-Related Lung Disease (WoRLD) Surveillance Report, 1994* (*1*).* This report summarizes surveillance data for occupational respiratory diseases (e.g., asbestosis, coal workers' pneumoconiosis, silicosis, byssinosis, hypersensitivity pneumonitis, and occupational asthma) and contains case-based and rate-based surveillance data, age-adjusted death rates, geographic distribution of occupational respiratory diseases, and proportionate mortality ratios.

Reference

1. NIOSH. Work-related lung disease (WoRLD) surveillance report, 1994. Morgantown, West Virginia: US Department of Health and Human Services, Public Health Service, CDC, 1994; DHHS publication no. (NIOSH)94-120.

*Single copies of this report are available without charge from the Surveillance Section, Epidemiological Investigations Branch, Division of Respiratory Disease Studies, NIOSH, CDC, 1095 Willowdale Road, Morgantown, WV 26505-2845; telephone (304) 285-6115; fax (304) 285-6111.

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 783-3238.

The data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. Inquiries about the *MMWR* Series, including material to be considered for publication, should be directed to: Editor, *MMWR* Series, Mailstop C-08, Centers for Disease Control and Prevention, Atlanta, GA 30333; telephone (404) 332-4555.

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