CDC
CENTERS FOR DISEASE CONTROL

April 17, 1992 / Vol. 41 / No. 15

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Current Trends

Public Health Uses of HIV-Infection Reports — South Carolina, 1986–1991

In the United States, public health officials use acquired immunodeficiency syndrome (AIDS) surveillance data to monitor trends, manage resources within communities, and identify specific needs of special populations (*1*). In addition to AIDS surveillance, 24 states require confidential reporting by name of HIV-infected persons to the local/state health department (Figure 1). This report summarizes public health uses for HIV-infection report data by one of these states—South Carolina Department of Health and Environmental Control (SCDHEC)—in guiding prevention and treatment programs.

AIDS has been reportable to the SCDHEC since 1982; cases of HIV infection have been reported to SCDHEC since February 1986. SCDHEC uses HIV-infection reports to 1) target health education/risk reduction and early intervention programs; 2) provide counseling, testing, referral, and partner-notification services; 3) offer testing for CD4+ T-lymphocytes and screening for other diseases; 4) expand HIV surveillance data collection; and 5) assist legislators and policy makers in targeting resources. In South Carolina, although 93% of AIDS cases among hospitalized persons have been reported (*2*), the completeness of HIV testing and reporting is not known. As of December 31, 1991, SCDHEC had received 5787 HIV reports and 1599 AIDS reports. Of all reported cases of HIV infection in South Carolina in 1991, 52% were from SCDHEC counseling and testing sites and clinics, and 48% were from other sources.

Targeting Health Education/Risk Reduction and Early Intervention Programs

To identify groups in need of HIV/AIDS services, SCDHEC compared HIV-infection and AIDS reports for the state and the United States by person's sex, race/ethnicity, and HIV-transmission category (Table 1). During 1990, a higher percentage of persons with HIV infection were women and blacks than were persons reported with AIDS. From 1986 through 1990, the proportion of HIV-infection reports (from all sources) for women in South Carolina increased 4.5-fold (from 6% to 27%), while the proportion of health department testing of women increased less than twofold (from 28% to

HIV-Infection Reports — Continued

54%). These data were used to target persons with high-risk behaviors with HIV-prevention messages through peer-directed health education and street outreach programs.

Counseling, Testing, Referral, and Partner-Notification Services

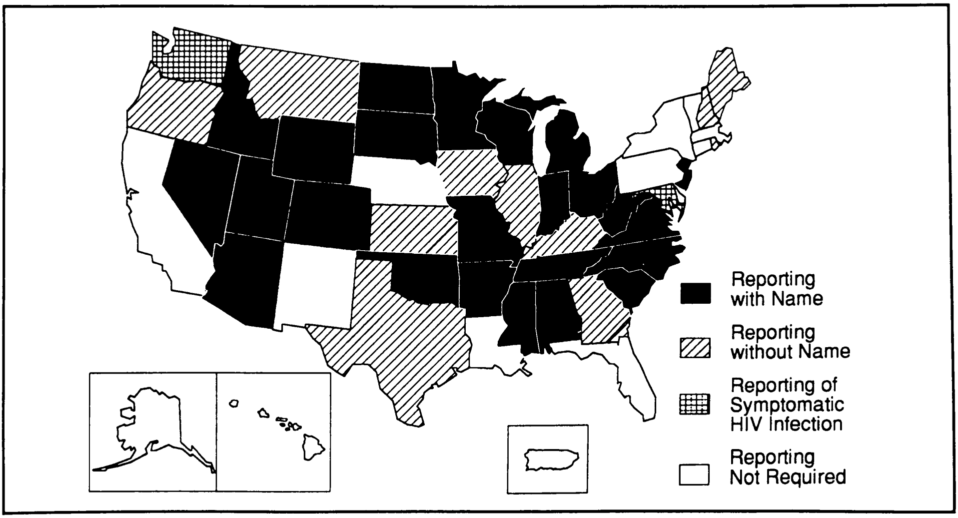
SCDHEC uses HIV-infection reports to target counseling and testing to persons with high-risk behaviors: following each HIV-infection report, either the patient or personal physician is contacted to develop a plan to counsel the infected person and for voluntary partner notification. Without disclosing the identity of the HIV-infected persons, named sex partners and/or persons with whom they shared needles during the previous 3 years are notified and offered counseling and testing. During 1990, of 1235 persons reported with HIV infection, SCDHEC attempted follow-up of 1139 (92%). Staff located 837 (73%) who named 1856 partners (mean: 2.2 partners named per index client); of the 1856 persons, 1336 (72%) were counseled and tested, and 263 (20%) persons with HIV infection were newly identified.

CD4+ T-Lymphocyte Testing and Screening for Other Diseases

Since March 1989, SCDHEC has offered an initial CD4+ T-lymphocyte test free to all persons newly identified as infected with HIV by SCDHEC counseling and testing sites or who were referred by personal physicians. In addition, subsequent CD4+ T-lymphocyte count monitoring is offered free to persons using health department services and for patients who were referred by personal physicians and who lack a source of payment for this test. From March 1989 through August 1991, the SCDHEC performed 4180 CD4+ tests for 2562 persons infected with HIV.

SCDHEC uses CD4+ T-lymphocyte counts to determine the priority of referral of HIV-infected persons to physicians for care and to refer HIV-infected persons to entitlement programs (i.e., state Medicaid AIDS waivers require a CD4+ count <500 cells/μL). Persons are also offered screening for tuberculosis and syphilis, and during

FIGURE 1. States with HIV-infection reporting — United States, April 1992



HIV-Infection Reports — Continued

return visits for follow-up CD4+ T-lymphocyte counts, clients are counseled on risk reduction and behavior changes; clients have reduced high-risk behavior as a result of this counseling (*3*).

From March 1989 through October 1990, SCDHEC evaluated a sample of persons newly identified as infected with HIV who had a CD4+ T-lymphocyte test performed within 90 days of their HIV-antibody–positive test results; of 422 persons, 12% had CD4+ <200 cells/μL, and 46% had <500 cells/μL. These findings were used to assess the need for prophylaxis for *Pneumocystis carinii* pneumonia and zidovudine treatment.

Expanding Surveillance for HIV Infection and AIDS

In collaboration with CDC, SCDHEC is obtaining additional health-related information from persons newly reported with HIV infection or AIDS in urban (Charleston County) and rural (Edisto Health District) areas of the state. Persons who consent to be interviewed provide information about their economic status, access to health care, reproductive history, and detailed sex and drug-use behaviors. Data from this supplemental surveillance are used to improve prevention and treatment services for HIV-infected persons.

TABLE 1. Reported cases of HIV infection and AIDS in South Carolina and of AIDS in the United States, 1990

	HIV*		AIDS			
	South Carolina		South Carolina		United States	
Category	No.	(%)	No.	(%)	No.	(%)
Sex						
Male	906	(73)	319	(81)	38,082	(88)
Female	329	(27)	74	(19)	5,257	(12)
Race[†]						
Black	877	(71)	234	(60)	13,186	(30)
White	355	(29)	152	(39)	22,342	(52)
Hispanic	3	(<1)	5	(<1)	7,322	(17)
Transmission category						
Men having sex with men	237	(19)	172	(44)	23,738	(55)
Injecting-drug use	115	(9)	83	(21)	10,018	(23)
Heterosexual contact	133	(10)	51	(13)	2,711	(6)
Other	49	(4)	46	(12)	4,252	(10)
Not reported/Unknown[§]	701	(58)	41	(10)	2,620	(6)
Total[¶]	**1,235**	**(100)**	**393**	**(100)**	**43,339**	**(100)**

*Persons newly identified with HIV infection in 1990; some HIV-infected persons may have progressed to AIDS in 1990.

[†]South Carolina has a population of 3.5 million; 69% are white, 30% are black, and <1% are Hispanic. The United States has a population of 248.7 million; 76% are white, 12% are black, 9% are Hispanic, and 3% are in other racial/ethnic groups. In South Carolina, there have been no reports of HIV infection among members of other racial/ethnic groups.

[§]These HIV-infection data reflect past use of a general morbidity report that did not include information on mode of transmission.

[¶]Because of incomplete reporting, all subset totals do not add to the column totals.

HIV-Infection Reports — Continued

Assisting Legislators and Policy Makers

SCDHEC uses HIV-infection surveillance data to assist legislators and policy makers in assessing the economic impact of the HIV epidemic and in targeting funds for prevention activities and medical services. For example, for each person newly identified with HIV infection (approximately 100 reported per month) in South Carolina, an estimated $50,000 will be expended for HIV-related health-care costs (*4*). Based on these projections, the partner-notification program during 1990 could result in an estimated cost savings of $13 million if program efforts prevented transmission of HIV to one other person during the lifetime of each of the 263 persons newly identified with HIV infection.

Reported by: L Kettinger, MPH, J Jones, MD, State Epidemiologist, South Carolina Dept of Health and Environmental Control. Div of HIV/AIDS, National Center for Infectious Diseases; National Center for Prevention Svcs, CDC.

Editorial Note: The activities of the SCDHEC illustrate how states can use HIV-infection reports to strengthen efforts to prevent HIV infection and enhance access to services for persons infected with HIV. Although HIV reports may not be representative of all HIV-infected persons, they provide a minimum estimate of those in need of health care and services. The findings in this report (i.e., a higher proportion of HIV infections among women and blacks in South Carolina during 1990) are consistent with trends reported for AIDS cases in South Carolina and HIV seroprevalence and AIDS data for the United States (*5–7*). South Carolina has used these data to target priority geographic areas within the state and direct the funding for education, prevention, and early intervention activities.

Although these activities can occur in the absence of HIV reporting, states with confidential HIV reporting by name can ensure that treatment services are offered to eligible persons with high-risk behaviors. For example, the findings in this report show the effectiveness of targeting counseling and testing to persons at high risk for HIV infection (e.g., named partners of HIV-infected persons); 20% of partners who were counseled and tested were HIV-antibody–positive compared with a 3% seropositive rate among all HIV-antibody tests in South Carolina county health departments in 1990.

Some of the other states that have implemented HIV surveillance use these data in similar ways. For example, in Missouri, approximately 25% of persons infected with HIV who were reported to the health department had been enrolled in a state-funded case-management plan that offers CD4+ testing, a medical evaluation, and zidovudine and other medications. Patients reported by personal physicians are offered care-coordination services and, for those who are eligible, provided insurance co-payments. In Minnesota, all persons reported with HIV infection are offered counseling and partner-notification assistance by the health department; in addition, funding for education and prevention services targeted to adolescents has resulted directly from HIV-report data that demonstrated the need for intervention among this age group. Similarly, in Arizona, services available through the health department to HIV-infected persons include counseling, psychosocial and physician referrals, and zidovudine treatment.

States also use HIV-infection reports in combination with AIDS case reporting and seroprevalence surveys to monitor the epidemic and are collaborating with CDC to develop a standardized HIV surveillance system (*8*). To maintain confidentiality, state health departments have implemented various measures to ensure the security of personal data maintained through HIV/AIDS surveillance (*9*).

HIV-Infection Reports — Continued

For HIV-infected persons who are identified in either public or private health-care settings, HIV reporting provides the opportunity for health departments to offer counseling, medical referrals, and partner-notification and prevention services. Health departments can also use HIV-infection report data to develop public health strategies that link surveillance with prevention and treatment services.

References

1. 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.
2. Jones JL, Rion P, Hermann P, et al. Improvement in AIDS case reporting, South Carolina [letter]. JAMA 1991;265:356.
3. Wykoff RF, Jones JL, Longshore ST, et al. Notification of the sex and needle-sharing partners of individuals with human immunodeficiency virus in rural South Carolina: 30-month experience. Sex Transm Dis 1991;18:217–22
4. Conway GA, Colley-Niemeyer B, Burt S, et al. Costs of AIDS and HIV-related disease in South Carolina: a comprehensive study [abstract]. Vol 2. IV International Conference on AIDS. Stockholm, June 12–16, 1988.
5. CDC. AIDS in women—United States. MMWR 1990;39:845–6.
6. CDC. The HIV/AIDS epidemic: the first 10 years. MMWR 1991;40:357–63,69.
7. St. Louis ME, Conway GA, Hayman CR, et al. Human immunodeficiency virus infection in disadvantaged adolescents. JAMA 1991;266:2387–91.
8. CDC. Update: public health surveillance for HIV infection—United States, 1989 and 1990. MMWR 1990;39:853,859–61.
9. Torres CG, Turner ME, Harkess JR, Istre GR. Security measures for AIDS and HIV. Am J Public Health 1991;81:210–11.

External Cause-of-Injury Coding in Hospital Discharge Data — United States, 1992

Accurate and reliable data regarding the external causes of injury (e.g., motor-vehicle crashes and assaults) are critical for planning, implementing, and evaluating injury-control programs (*1*). In the United States, approximately 25% of the total population is injured annually (*2*), and nonfatal injuries account for one of every 6 hospital days and 10% of all hospital discharges (*3*). Although hospital discharge data (HDD) are an important source of information for severe nonfatal injuries (*4*), external causes of injury have not been routinely reported in HDD, limiting the usefulness of these data for injury surveillance. This report summarizes recent efforts to improve the uniform reporting of external causes of injury in HDD by the National Committee on Vital and Health Statistics (NCVHS) and the National Uniform Billing Committee (NUBC).

NCVHS

The NCVHS is a legislatively mandated advisory committee to the Department of Health and Human Services. In June 1991, the NCVHS approved a report by the NCVHS Subcommittee on Ambulatory and Hospital Care Statistics on the need to include external cause-of-injury codes (E-codes) in HDD (*5*). Key recommendations in the report were: 1) the external cause of injury should be recorded in the medical record whenever an injury is the principal diagnosis or directly related to the principal diagnosis; 2) E-codes should be included in HDD sets; 3) the revised uniform billing

External Cause-of-Injury Coding — Continued

form for hospitals should provide a designated space for an E-code; 4) a hospital record or bill should be regarded as incomplete if there is evidence of an injury but no E-code is recorded; and 5) national guidelines and training materials for E-coding should be developed.

The NCVHS report was provided to the NUBC for use in its deliberations and is being used by CDC to guide state E-coding activities.

NUBC

The NUBC, a committee comprising representatives from payor and provider organizations and recognized by the Health Care Financing Administration, is responsible for maintaining a standard billing form for hospitals. In February 1992, the NUBC completed final revisions and approved a new standard billing form for hospitals (the UB-92), which will replace the current form (the UB-82) used by hospitals to bill third-party payors. The UB-92 includes a labeled space for an E-code and is scheduled for implementation in the fall of 1993.

Reported by: Office of Planning and Extramural Programs, National Center for Health Statistics; Div of Injury Control, National Center for Environmental Health and Injury Control, CDC.

Editorial Note: A primary objective of the collection of external cause-of-injury data is to assist in the implementation of injury-control programs. However, such information also is required to assess progress toward achievement of the national health objectives for the year 2000 that relate to the reduction of injury morbidity and injury-control interventions (e.g., objectives 7.3, 9.3[a–f], 9.4, 9.5, 9.6, and 9.8) (*3*). In addition to the efforts of the NCVHS and NUBC, in 1988, the Council of State and Territorial Epidemiologists recommended that "all hospital discharge summaries of injured patients include the E-code to describe the external cause of injury" (*6*). CDC and state health departments are using this recommendation to encourage the reporting of E-codes in HDD.

Thirty states use HDD to evaluate hospital use and costs; in 23 (77%) of these states, the uniform hospital billing form is used to collect this information. Six states (Arizona, California, New York, Rhode Island, Vermont, and Washington) require the reporting of E-codes in HDD. The efforts of the NCVHS and NUBC to improve the uniform reporting of E-codes in HDD will facilitate states' efforts to collect E-codes in HDD and increase the availability of information on the external cause of nonfatal injuries.

CDC is evaluating the use of E-coded HDD by the states and is planning to develop national E-coding guidelines and training materials. To plan, implement, and evaluate injury-prevention programs, states should require the reporting of E-codes in HDD to obtain information on severe nonfatal injuries (*6*). Additional information on E-coding in HDD is available to state and local health departments from CDC's Program Development and Implementation Branch, Division of Injury Control, National Center for Environmental Health and Injury Control; telephone (404) 488-4662.

References

1. Committee to Review the Status and Progress of the Injury Control Program at the CDC. Injury control: a review of the status and progress of the injury control program at the CDC. Washington, DC: National Academy Press; 1988.
2. Rice DP, MacKenzie EJ, and associates. Cost of injury in the United States: a report to Congress. San Francisco: University of California, Institute for Health and Aging, and Johns Hopkins University, Injury Prevention Center, 1989.

External Cause-of-Injury Coding — Continued

3. 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, 1990; DHHS publication no. (PHS)91-50213.
4. Smith GS, Langiois JA, Buechner JS. Methodological issues in using hospital discharge data to determine the incidence of hospitalized injuries. Am J Epidemiol 1991;134:1146–58.
5. National Committee on Vital and Health Statistics Subcommittee on Ambulatory and Hospital Care Statistics. Report on the need to collect external cause-of-injury codes in hospital discharge data. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1991. (NCHS working paper; series no. 38).
6. Council of State and Territorial Epidemiologists. [CSTE position statement no. 7;adopted in 1988]. In: Sniezek JE, Finklea JF, Graitcer PL. Injury coding and hospital discharge data. JAMA 1989;262:2270–2.

Epidemiologic Notes and Reports

Update: Foodborne Listeriosis — United States, 1988–1990

Although outbreaks of invasive disease caused by *Listeria monocytogenes* have been associated with ingestion of a variety of contaminated foods (*1–5*), most listeriosis in the United States occurs as isolated or sporadic cases. To determine the incidence of listeriosis and identify risk factors for disease, during 1988–1990, CDC collaborated with investigators in four states to conduct active laboratory-based surveillance and special studies in a population of more than 18 million U.S. residents. This report summarizes the findings of these studies (*6,7*).

The study areas included Los Angeles County, the San Francisco Bay area, the Atlanta metropolitan area, four counties in Tennessee, and the state of Oklahoma. Investigators made regular calls to all hospital laboratories and completed case report forms for all residents in whom *L. monocytogenes* was isolated from a usually sterile site (e.g., blood, cerebrospinal fluid [CSF], or amniotic fluid).

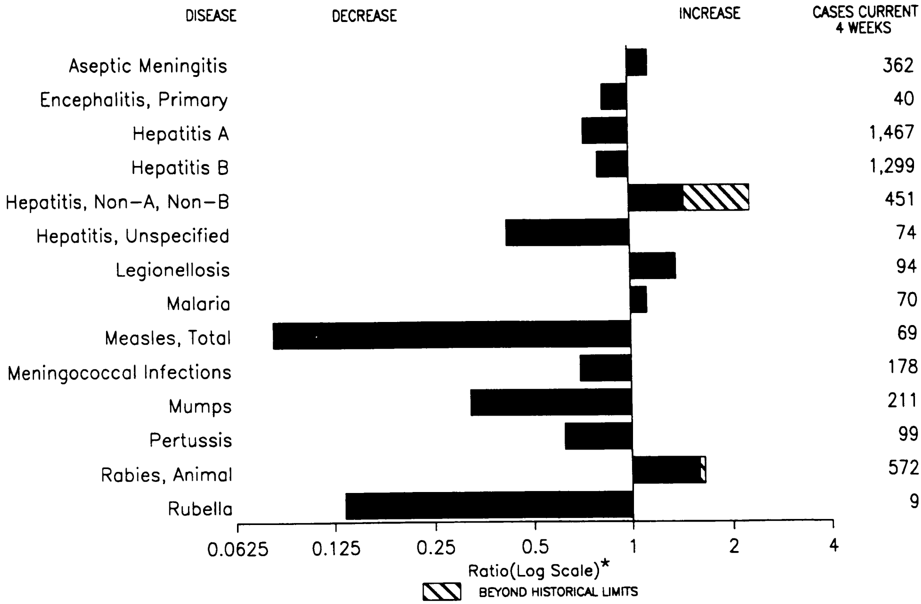
From November 1988 through December 1990, 301 cases were identified in the surveillance areas, an annual incidence of 7.4 cases per 1 million population; 67 (23%) persons died. Of the 301 cases, 99 (33%) occurred among pregnant women or their newborns. Among the 98 persons with nonperinatal listeriosis for whom information was available, nearly all had at least one immunosuppressive condition, including corticosteroid use (31%), malignancy (29%), renal disease (24%), diabetes (24%), or acquired immunodeficiency syndrome (20%).

Dietary histories of persons with listeriosis identified through the active surveillance project were compared with those of controls matched for age and medical condition (including pregnancy). Patients with listeriosis were more likely than controls to have eaten soft cheeses (odds ratio [OR]=2.6; 95% confidence interval [CI]=1.4–4.8) or food purchased from store delicatessen counters (OR=1.6; 95% CI=1.0–2.5). Thirty-two percent of sporadic disease could be attributed to consumption of these foods. Eating undercooked chicken was also associated with increased risk in immunosuppressed persons (OR=3.3; 95% CI=1.2–9.2) (*6*).

Food obtained from the refrigerators of patients with listeriosis was cultured for *L. monocytogenes* using at least two selective enrichment methods, and isolates of *L. monocytogenes* from food were compared with isolates from patients using multilocus enzyme electrophoresis. Overall, 79 (64%) of 123 refrigerators contained at

(Continued on page 257)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending April 11, 1992, with historical data — United States



*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 April 11, 1992 (15th Week)

	Cum. 1992		Cum. 1992
AIDS	14,114	Measles: imported	48
Anthrax	-	indigenous	353
Botulism: Foodborne	7	Plague	-
Infant	17	Poliomyelitis, Paralytic*	-
Other	-	Psittacosis	14
Brucellosis	3	Rabies, human	-
Cholera	20	Syphilis, primary & secondary	10,054
Congenital rubella syndrome	3	Syphilis, congenital, age < 1 year	-
Diphtheria	1	Tetanus	4
Encephalitis, post-infectious	24	Toxic shock syndrome	76
Gonorrhea	140,290	Trichinosis	7
Haemophilus influenzae (invasive disease)	476	Tuberculosis	5,080
Hansen Disease	32	Tularemia	17
Leptospirosis	9	Typhoid fever	85
Lyme Disease	1,065	Typhus fever, tickborne (RMSF)	44

*Nine suspected cases of poliomyelitis were reported in 1991; 4 of the 8 suspected cases in 1990 were confirmed, and all were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending April 11, 1992, and April 13, 1991 (15th 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. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	14,114	1,260	151	24	140,290	163,614	5,042	4,124	1,183	179	370	1,065
NEW ENGLAND	499	93	12	-	3,082	4,306	196	184	21	13	28	64
Maine	18	7	-	-	32	35	24	10	3	-	2	-
N.H.	13	4	2	-	-	111	14	15	6	-	3	5
Vt.	3	3	1	-	7	16	2	3	1	-	1	1
Mass.	314	34	6	-	1,150	1,753	91	130	8	13	13	20
R.I.	25	45	3	-	256	343	45	13	3	-	9	24
Conn.	126	-	-	-	1,637	2,048	20	13	-	-	-	14
MID. ATLANTIC	3,518	156	9	3	13,646	20,423	447	599	125	10	117	814
Upstate N.Y.	444	65	-	-	2,061	3,528	123	132	75	5	48	561
N.Y. City	1,957	19	1	-	4,574	8,065	132	56	2	-	1	-
N.J.	712	4	-	-	2,382	3,060	68	172	35	-	19	78
Pa.	405	68	8	3	4,629	5,770	124	239	13	5	49	175
E.N. CENTRAL	1,345	181	45	3	22,658	31,806	590	555	62	10	80	26
Ohio	265	59	18	-	8,103	9,714	135	86	35	-	41	19
Ind.	155	15	3	-	2,574	3,204	179	157	1	3	4	4
Ill.	516	31	9	-	8,283	9,484	100	31	7	1	3	2
Mich.	340	73	14	3	2,961	7,395	45	187	5	6	22	1
Wis.	69	3	1	-	737	2,009	131	94	14	-	10	-
W.N. CENTRAL	470	84	4	4	7,218	8,077	573	229	89	5	16	33
Minn.	66	5	1	-	835	830	182	13	3	1	1	-
Iowa	27	16	-	2	547	533	13	12	-	-	3	6
Mo.	265	31	-	-	4,199	4,951	119	179	84	4	4	25
N. Dak.	1	1	-	-	25	19	19	1	-	-	1	1
S. Dak.	3	3	-	1	59	118	140	-	-	-	-	-
Nebr.	18	9	1	1	3	614	49	12	-	-	7	1
Kans.	90	19	2	-	1,550	1,012	51	12	2	-	-	-
S. ATLANTIC	3,053	295	27	8	50,580	48,368	331	723	114	27	53	55
Del.	38	10	4	-	461	659	10	65	-	1	7	21
Md.	366	42	6	-	4,690	4,715	73	116	12	5	8	5
D.C.	260	6	-	-	2,433	3,076	6	37	-	-	6	-
Va.	155	50	5	2	5,343	4,805	28	56	9	12	6	19
W. Va.	15	-	1	-	274	354	3	22	-	5	-	1
N.C.	174	40	8	-	6,775	9,205	23	119	35	-	10	4
S.C.	145	5	-	-	3,079	3,489	9	18	-	-	12	-
Ga.	338	34	1	-	15,656	12,514	39	92	36	-	-	1
Fla.	1,562	108	2	6	11,869	9,551	140	198	22	4	4	4
E.S. CENTRAL	429	63	6	-	13,384	14,475	79	329	405	1	17	11
Ky.	48	28	4	-	1,334	1,537	24	23	-	-	8	4
Tenn.	127	14	1	-	4,183	5,745	31	268	401	-	7	7
Ala.	169	14	-	-	4,523	3,354	11	36	4	1	2	-
Miss.	85	7	1	-	3,344	3,839	13	2	-	-	-	-
W.S. CENTRAL	1,268	69	11	2	13,889	17,636	334	329	19	27	2	12
Ark.	59	8	7	-	2,523	1,981	34	30	4	3	-	1
La.	261	7	-	-	1,824	3,625	25	42	-	1	-	-
Okla.	94	-	1	2	1,444	1,828	67	79	13	2	2	5
Tex.	854	54	3	-	8,098	10,202	208	178	2	21	-	6
MOUNTAIN	340	39	7	1	2,988	3,365	718	180	57	20	24	-
Mont.	2	-	1	-	23	22	25	16	7	-	2	-
Idaho	7	3	-	-	37	50	15	23	1	-	1	-
Wyo.	3	-	-	-	14	37	-	2	5	-	1	-
Colo.	131	13	3	1	1,068	912	192	34	24	12	3	-
N. Mex.	32	5	2	-	265	313	56	36	4	3	1	-
Ariz.	88	14	1	-	989	1,272	366	31	8	1	11	-
Utah	30	-	-	-	52	113	42	3	4	4	-	-
Nev.	47	4	-	-	540	646	22	35	4	-	5	-
PACIFIC	3,192	280	30	3	12,845	15,158	1,774	996	291	66	33	50
Wash.	134	-	-	-	1,095	1,340	176	75	34	2	2	1
Oreg.	98	-	-	-	429	577	117	87	19	5	-	-
Calif.	2,900	245	27	2	10,802	12,823	1,436	828	237	58	30	49
Alaska	7	2	3	-	215	214	8	3	1	1	-	-
Hawaii	53	33	-	1	304	204	37	3	-	-	1	-
Guam	-	-	-	-	35	-	4	2	-	2	-	1
P.R.	107	44	-	-	15	168	7	78	4	4	1	-
V.I.	2	-	-	-	30	185	5	3	-	-	-	-
Amer. Samoa	-	-	-	-	10	20	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	24	2	-	-	-	-	-	-

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

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending April 11, 1992, and April 13, 1991 (15th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	1992	Cum. 1992	Cum. 1991
UNITED STATES	199	7	353	1	48	3,368	727	40	794	20	331	601	-	44	262
NEW ENGLAND	9	1	3	-	5	11	43	-	-	-	32	77	-	4	1
Maine	-	-	-	-	-	-	3	-	-	-	2	3	-	-	-
N.H.	1	1	1	-	-	-	4	-	-	-	13	11	-	-	1
Vt.	-	-	-	-	-	5	1	-	-	-	-	3	-	-	-
Mass.	5	-	2	-	3	-	19	-	-	-	16	54	-	-	-
R.I.	1	-	-	-	-	-	-	-	-	-	-	-	-	4	-
Conn.	2	-	-	-	2	6	16	-	-	-	1	6	-	-	-
MID. ATLANTIC	59	-	59	-	6	2,110	73	-	54	1	49	67	-	4	150
Upstate N.Y.	9	-	-	-	1	68	33	-	24	1	18	38	-	3	142
N.Y. City	26	-	25	-	1	425	7	-	4	-	2	-	-	-	-
N.J.	16	-	33	-	1	574	14	-	7	-	8	4	-	1	-
Pa.	8	-	1	-	3	1,043	19	-	19	-	21	25	-	-	8
E.N. CENTRAL	8	4	10	-	2	55	106	5	85	3	24	111	-	5	15
Ohio	1	-	2	-	1	1	26	3	28	2	7	27	-	-	-
Ind.	1	4	8	-	-	-	5	1	4	1	8	20	-	-	1
Ill.	1	-	-	-	-	24	41	-	23	-	3	28	-	5	3
Mich.	4	-	-	-	-	25	27	1	28	-	1	20	-	-	11
Wis.	1	-	-	-	1	5	7	-	2	-	5	16	-	-	-
W.N. CENTRAL	12	-	5	-	-	13	31	1	19	-	26	53	-	2	5
Minn.	5	-	3	-	-	2	5	-	2	-	8	20	-	-	4
Iowa	2	-	-	-	-	7	3	-	4	-	1	4	-	-	-
Mo.	3	-	1	-	-	-	11	1	10	-	12	17	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-
S. Dak.	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-
Nebr.	-	-	-	-	-	-	3	-	1	-	2	[illegible]	-	-	-
Kans.	1	-	1	-	-	4	9	-	2	-	-	6	-	2	-
S. ATLANTIC	37	1	59	1	4	184	139	5	370	6	46	32	-	3	2
Del.	2	1	1	-	-	16	2	-	-	-	-	-	-	-	-
Md.	13	-	1	1†	3	58	14	2	33	-	14	6	-	-	1
D.C.	2	-	-	-	-	-	-	-	2	-	-	-	-	1	-
Va.	6	-	4	-	1	18	21	2	20	2	4	4	-	-	-
W. Va.	-	-	-	-	-	-	12	-	12	3	3	6	-	-	-
N.C.	6	-	19	-	-	1	26	-	68	-	6	7	-	-	-
S.C.	-	-	-	-	-	12	11	1	45	1	9	-	-	-	-
Ga.	2	-	-	-	-	-	19	-	18	-	2	6	-	-	-
Fla.	6	-	34	-	-	79	34	-	172	-	8	3	-	2	1
E.S. CENTRAL	4	-	170	-	17	1	53	-	26	1	4	17	-	2	-
Ky.	-	-	168	-	-	-	21	-	-	-	-	-	-	-	-
Tenn.	1	-	-	-	1	1	12	-	12	1	2	9	-	2	-
Ala.	3	-	-	-	-	-	18	-	4	-	2	8	-	-	-
Miss.	-	-	2	-	16	-	2	-	10	-	-	-	-	-	-
W.S. CENTRAL	2	-	-	-	-	5	45	7	89	-	13	14	-	-	1
Ark.	-	-	-	-	-	5	9	-	4	-	7	-	-	-	1
La.	-	-	-	-	-	-	10	-	8	-	-	7	-	-	-
Okla.	2	-	-	-	-	-	7	1	2	-	6	7	-	-	-
Tex.	-	-	-	-	-	-	19	6	75	-	-	-	-	-	-
MOUNTAIN	8	-	1	-	-	174	39	16	55	6	47	78	-	-	2
Mont.	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	1	5	-	1	3	11	14	-	-	-
Wyo.	-	-	1	-	-	-	2	-	-	-	-	3	-	-	-
Colo.	5	-	-	-	-	1	6	-	4	1	19	31	-	-	-
N. Mex.	2	-	-	-	-	84	3	N	N	1	11	12	-	-	1
Ariz.	1	-	-	-	-	72	9	6	34	-	-	8	-	-	-
Utah	-	-	-	-	-	6	1	10	13	-	5	10	-	-	-
Nev.	-	-	-	-	-	10	5	-	3	1	1	-	-	-	1
PACIFIC	60	1	46	-	14	815	198	6	96	3	90	152	-	24	86
Wash.	2	-	-	-	7	4	28	-	5	2	24	38	-	-	-
Oreg.	6	-	3	-	-	9	32	N	N	-	9	27	-	1	-
Calif.	47	1	35	-	6	800	130	5	88	1	53	57	-	21	85
Alaska	1	-	8	-	1	-	4	-	-	-	-	5	-	-	-
Hawaii	4	-	-	-	-	2	4	1	3	-	4	25	-	2	1
Guam	1	U	1	U	3	-	-	U	4	U	-	-	U	-	-
P.R.	-	-	5	-	-	7	3	-	-	2	8	8	-	-	-
V.I.	-	-	-	-	-	2	-	-	9	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	24	-	U	-	U	121	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	1	-	U	-	-

*For measles only, imported cases includes 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 April 11, 1992, and April 13, 1991 (15th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	10,054	12,058	76	5,080	5,561	17	85	44	2,065
NEW ENGLAND	192	328	4	94	147	-	10	2	183
Maine	-	-	-	20	16	-	-	-	-
N.H.	-	10	3	-	-	-	-	-	-
Vt.	1	1	-	-	1	-	-	-	-
Mass.	84	166	1	46	65	-	7	1	-
R.I.	13	16	-	10	16	-	-	1	-
Conn.	94	135	-	18	49	-	3	-	183
MID. ATLANTIC	1,516	2,038	11	1,108	1,238	-	28	1	628
Upstate N.Y.	90	103	4	36	85	-	4	-	367
N.Y. City	797	1,029	-	688	766	-	9	-	-
N.J.	202	344	-	196	238	-	11	-	201
Pa.	427	562	7	188	149	-	4	1	60
E.N. CENTRAL	1,209	1,356	21	486	633	-	3	5	27
Ohio	205	155	7	91	101	-	2	4	1
Ind.	71	27	2	46	39	-	-	-	-
Ill.	578	696	3	280	338	-	-	-	5
Mich.	181	332	9	46	122	-	1	-	1
Wis.	174	146	-	23	33	-	-	1	20
W.N. CENTRAL	355	213	10	95	158	3	-	1	412
Minn.	23	23	2	22	27	-	-	-	99
Iowa	10	21	4	7	23	-	-	-	48
Mo.	274	127	1	38	66	3	-	1	2
N. Dak.	1	-	1	1	3	-	-	-	18
S. Dak.	-	1	-	9	11	-	-	-	28
Nebr.	1	1	2	2	5	-	-	-	2
Kans.	46	40	-	16	23	-	-	-	215
S. ATLANTIC	2,890	3,654	9	1,059	969	3	8	12	440
Del.	64	42	2	5	8	-	-	-	80
Md.	226	335	1	74	85	2	1	-	156
D.C.	146	222	-	43	60	-	1	-	5
Va.	224	301	1	98	95	1	-	-	65
W. Va.	5	9	-	19	26	-	1	-	13
N.C.	697	555	2	151	105	-	-	10	2
S.C.	350	409	1	111	114	-	-	-	32
Ga.	632	888	1	220	195	-	-	-	82
Fla.	546	893	1	338	281	-	5	2	5
E.S. CENTRAL	1,480	1,273	-	278	422	4	2	-	39
Ky.	43	25	-	107	91	1	-	-	23
Tenn.	334	488	-	6	136	3	-	-	-
Ala.	703	423	-	123	106	-	-	-	16
Miss.	400	337	-	42	89	-	2	-	-
W.S. CENTRAL	1,796	2,124	1	450	540	6	1	21	166
Ark.	284	122	-	37	55	3	-	6	11
La.	716	680	-	27	28	-	-	-	-
Okla.	73	45	-	29	39	3	-	15	88
Tex.	723	1,277	1	357	418	-	1	-	67
MOUNTAIN	135	154	6	145	147	1	1	1	30
Mont.	2	1	-	-	-	-	-	-	1
Idaho	1	3	1	8	2	-	1	-	-
Wyo.	1	1	-	-	2	-	-	-	10
Colo.	19	21	2	5	6	-	-	-	-
N. Mex.	16	8	-	20	9	1	-	-	1
Ariz.	60	117	2	71	83	-	-	-	18
Utah	2	3	1	19	25	-	-	1	-
Nev.	34	-	-	22	20	-	-	-	-
PACIFIC	481	918	14	1,365	1,307	-	32	1	140
Wash.	32	48	-	81	79	-	2	-	-
Oreg.	16	26	-	33	33	-	-	-	-
Calif.	419	841	14	1,218	1,112	-	28	1	131
Alaska	1	2	-	14	22	-	-	-	9
Hawaii	13	1	-	19	61	-	2	-	-
Guam	1	-	-	11	-	-	1	-	-
P.R.	68	118	-	40	46	-	-	-	15
V.I.	16	34	-	1	1	-	-	-	-
Amer. Samoa	-	-	-	-	1	-	-	-	-
C.N.M.I.	2	-	-	8	4	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending April 11, 1992 (15th Week)

Reporting Area	All Causes, By Age (Years)						P&I[†]
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	603	417	105	55	14	12	52
Boston, Mass.	144	90	31	16	5	2	15
Bridgeport, Conn.	60	42	10	4	3	1	4
Cambridge, Mass.	26	21	3	2	-	-	3
Fall River, Mass.	29	22	3	3	1	-	2
Hartford, Conn.	36	24	6	4	1	1	1
Lowell, Mass.	22	13	6	2	-	1	1
Lynn, Mass.	13	11	2	-	-	-	-
New Bedford, Mass.	30	23	7	-	-	-	1
New Haven, Conn.	48	33	8	4	-	3	5
Providence, R.I.	59	40	15	2	1	1	4
Somerville, Mass.	9	7	2	-	-	-	1
Springfield, Mass.	47	30	2	12	2	1	5
Waterbury, Conn.	21	17	4	-	-	-	2
Worcester, Mass.	59	44	6	6	1	2	8
MID. ATLANTIC	2,684	1,701	527	295	80	80	133
Albany, N.Y.	43	33	6	2	1	1	3
Allentown, Pa.	29	25	4	-	-	-	3
Buffalo, N.Y.	100	62	24	9	3	2	6
Camden, N.J.	39	26	10	2	-	1	4
Elizabeth, N.J.	12	5	3	4	-	-	-
Erie, Pa.§	58	45	12	-	1	-	5
Jersey City, N.J.	64	32	17	4	1	10	2
New York City, N.Y.	1,334	818	262	197	41	16	52
Newark, N.J.	75	32	21	16	3	3	5
Paterson, N.J.	31	16	3	4	1	7	-
Philadelphia, Pa.	477	285	97	38	23	33	24
Pittsburgh, Pa.§	71	52	10	5	2	2	3
Reading, Pa.	42	33	9	-	-	-	7
Rochester, N.Y.	106	78	16	6	3	3	7
Schenectady, N.Y.	29	26	3	-	-	-	-
Scranton, Pa.§	28	20	6	1	1	-	1
Syracuse, N.Y.	78	57	14	5	-	2	6
Trenton, N.J.	24	17	6	1	-	-	3
Utica, N.Y.	25	21	4	-	-	-	1
Yonkers, N.Y.	19	18	-	1	-	-	1
E.N. CENTRAL	2,274	1,409	414	248	127	76	107
Akron, Ohio	82	61	14	1	1	5	2
Canton, Ohio	46	37	8	1	-	-	4
Chicago, Ill.	505	185	119	118	72	11	19
Cincinnati, Ohio	125	89	23	5	4	4	8
Cleveland, Ohio	130	93	20	9	3	5	1
Columbus, Ohio	174	125	19	17	6	7	7
Dayton, Ohio	114	74	30	7	1	2	5
Detroit, Mich.	244	129	38	35	23	19	3
Evansville, Ind.	57	49	6	2	-	-	2
Fort Wayne, Ind.	75	49	19	2	3	2	3
Gary, Ind.	24	16	3	4	1	-	1
Grand Rapids, Mich.	65	45	11	4	-	5	9
Indianapolis, Ind.	167	114	33	11	5	4	9
Madison, Wis.	26	17	4	3	1	1	3
Milwaukee, Wis.	127	100	15	10	1	1	8
Peoria, Ill.	45	36	5	2	1	1	6
Rockford, Ill.	46	31	8	3	1	3	4
South Bend, Ind.	53	40	9	1	1	2	5
Toledo, Ohio	97	73	15	7	2	-	6
Youngstown, Ohio	72	46	15	6	1	4	2
W.N. CENTRAL	801	576	121	56	21	27	42
Des Moines, Iowa	86	68	13	1	2	2	12
Duluth, Minn.	21	17	2	2	-	-	1
Kansas City, Kans.	28	14	7	4	-	3	1
Kansas City, Mo.	95	62	15	10	3	5	7
Lincoln, Nebr.	56	47	6	2	-	1	3
Minneapolis, Minn.	175	121	29	13	3	9	8
Omaha, Nebr.	90	60	17	7	3	3	4
St. Louis, Mo.	145	99	23	12	8	3	2
St. Paul, Minn.	62	51	5	4	1	1	3
Wichita, Kans.	43	37	4	1	1	-	1

Reporting Area	All Causes, By Age (Years)						P&I[†]
	All Ages	≥65	45-64	25-44	1-24	<1	Total
S. ATLANTIC	1,320	829	261	135	42	52	66
Atlanta, Ga.	214	124	43	33	7	7	6
Baltimore, Md.	190	111	36	29	9	5	16
Charlotte, N.C.	85	61	16	4	2	2	6
Jacksonville, Fla.	94	63	23	4	3	1	15
Miami, Fla.	116	72	19	11	8	6	-
Norfolk, Va.	64	39	11	6	3	5	2
Richmond, Va.	62	40	11	6	1	4	1
Savannah, Ga.	51	37	8	4	1	1	5
St. Petersburg, Fla.	67	52	7	5	-	3	2
Tampa, Fla.	202	137	48	7	4	5	9
Washington, D.C.	153	78	34	24	4	13	4
Wilmington, Del.	22	15	5	2	-	-	-
E.S. CENTRAL	719	452	143	71	19	34	55
Birmingham, Ala.	122	75	26	13	1	7	2
Chattanooga, Tenn.	55	33	7	12	2	1	4
Knoxville, Tenn.	74	55	13	4	-	2	8
Louisville, Ky.	87	50	22	9	3	3	3
Memphis, Tenn.	154	85	32	10	10	17	17
Mobile, Ala.	61	43	11	5	-	2	9
Montgomery, Ala.	45	30	7	6	-	2	-
Nashville, Tenn.	121	81	25	12	3	-	12
W.S. CENTRAL	1,407	838	319	154	43	53	60
Austin, Tex.	49	30	10	7	1	1	2
Baton Rouge, La.	50	32	9	6	2	1	2
Corpus Christi, Tex.	39	25	10	3	-	1	1
Dallas, Tex.	189	100	49	29	6	5	2
El Paso, Tex.	90	61	17	9	2	1	4
Ft. Worth, Tex.	90	52	19	9	3	7	3
Houston, Tex.	372	198	99	45	12	18	26
Little Rock, Ark.	74	48	17	6	1	2	3
New Orleans, La.	143	82	27	17	9	8	-
San Antonio, Tex.	163	107	36	10	7	3	8
Shreveport, La.	58	37	13	6	-	2	6
Tulsa, Okla.	90	66	13	7	-	4	3
MOUNTAIN	769	515	135	82	18	19	57
Albuquerque, N.M.	86	56	14	11	3	2	2
Colo. Springs, Colo.	48	34	4	7	1	2	10
Denver, Colo.	126	83	22	14	3	4	10
Las Vegas, Nev.	132	91	32	8	-	1	11
Ogden, Utah	21	16	4	1	-	-	3
Phoenix, Ariz.	101	67	17	14	-	3	8
Pueblo, Colo.	30	24	3	2	1	-	2
Salt Lake City, Utah	99	55	23	11	7	3	6
Tucson, Ariz.	126	89	16	14	3	4	5
PACIFIC	2,077	1,386	359	219	52	50	132
Berkeley, Calif.	22	12	3	4	1	2	1
Fresno, Calif.	61	40	8	6	4	3	6
Glendale, Calif.	36	30	2	2	1	-	5
Honolulu, Hawaii	88	61	10	15	-	2	8
Long Beach, Calif.	78	52	18	5	1	2	15
Los Angeles, Calif.	642	418	118	68	18	10	28
Pasadena, Calif.	29	21	5	2	-	1	3
Portland, Oreg.	139	101	20	13	2	3	11
Sacramento, Calif.	131	95	21	11	2	2	7
San Diego, Calif.	159	96	29	20	8	6	16
San Francisco, Calif.	166	92	32	37	1	4	2
San Jose, Calif.	178	115	40	10	2	11	9
Santa Cruz, Calif.	31	24	4	1	2	-	5
Seattle, Wash.	162	117	22	17	5	1	2
Spokane, Wash.	52	40	9	1	-	2	3
Tacoma, Wash.	103	72	18	7	5	1	11
TOTAL	12,654[†]	8,123	2,384	1,315	416	403	704

*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

Listeriosis — Continued

least one food with *L. monocytogenes,* and 26 (33%) of the 79 refrigerators with *L. monocytogenes* grew the same strain as that which caused illness in a person living in the household. Foods that were ready-to-eat and foods containing higher concentrations of *L. monocytogenes* (those positive by a direct-plating method) were independently associated with an increased likelihood of containing the patient-matching strain (*7*).

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Editorial Note: Listeriosis is a rare but serious illness in the United States. Although the potential for epidemic foodborne transmission of *L. monocytogenes* was first documented in 1981 (*1*), recent studies indicate that a substantial portion of sporadic listeriosis is foodborne (*6,7*) and associated with consumption of nonreheated hot dogs (*8*), undercooked chicken (*6,8*), various soft cheeses (*6*), and food purchased from store delicatessen counters (*6*).

Although contaminated food has been a major cause of both epidemic and sporadic listeriosis, most persons are at low risk for listeriosis. Persons at increased risk for listeriosis (i.e., pregnant women, the elderly, and those with immunosuppressive conditions) can decrease their risk by avoiding consumption of certain foods and following food-handling practices that also may help prevent other foodborne illnesses (see box).

Dietary Recommendations for Preventing Foodborne Listeriosis

For all persons:

1. Thoroughly cook raw food from animal sources (e.g., beef, pork, and poultry).
2. Thoroughly wash raw vegetables before eating.
3. Keep uncooked meats separate from vegetables, cooked foods, and ready-to-eat foods.
4. Avoid consumption of raw (unpasteurized) milk or foods made from raw milk.
5. Wash hands, knives, and cutting boards after handling uncooked foods.

Additional recommendations for persons at high risk*:

1. Avoid soft cheeses (e.g., Mexican-style, feta, Brie, Camembert, and blue-veined cheese). (There is no need to avoid hard cheeses, cream cheese, cottage cheese, or yogurt.)
2. Leftover foods or ready-to-eat foods (e.g., hot dogs) should be reheated until steaming hot before eating.
3. Although the risk for listeriosis associated with foods from delicatessen counters is relatively low, pregnant women and immunosuppressed persons may choose to avoid these foods or to thoroughly reheat cold cuts before eating.

*Persons immunocompromised by illness or medications, pregnant women, and the elderly.

Listeriosis — Continued

Early recognition of *Listeria* infection, especially in pregnant women, is important to assure prompt treatment and to limit adverse outcomes. Although physicians usually practice increased diagnostic vigilance in caring for severely immunocompromised patients, pregnant women may not be routinely considered at risk for invasive bacterial disease.

Diagnosis of listeriosis is best made by routine bacterial culture of specimens from usually sterile sites such as blood or CSF. Stool culture is not reliable because many persons have enteric colonization with *L. monocytogenes* without invasive disease. Serologic testing is not useful in diagnosing listeriosis. Health-care providers should therefore 1) consider listeriosis in ill patients at risk for the disease, 2) obtain blood cultures and, when appropriate, CSF or amniotic cultures from ill patients at risk for listeriosis, including pregnant women with fever, 3) disseminate dietary recommendations to high-risk persons, and 4) report all cases of listeriosis to state health departments. The continued active surveillance for listeriosis in several states will assist evaluation of the impact of prevention strategies.

Additional information about listeriosis (including consumer information designed for distribution to patients) is available from CDC's Meningitis and Special Pathogens Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Mailstop C-09, 1600 Clifton Road, NE, Atlanta, GA 30333.

References

1. Schlech WF, Lavigne PM, Bortolussi RA, et al. Epidemic listeriosis— evidence for transmission by food. N Engl J Med 1983;308:203–6.
2. Fleming DW, Cochi SL, MacDonald KL, et al. Pasteurized milk as a vehicle of infection in an outbreak of listeriosis. N Engl J Med 1985;312:404–7.
3. Linnan MJ, Mascola L, Lou XD, et al. Epidemic listeriosis associated with Mexican-style cheese. N Engl J Med 1988;319:823–8.
4. Bille J. Epidemiology of human listeriosis in Europe, with special reference to the Swiss outbreak. In: Miller AJ, Smith JL, Somkuti GA, eds. Foodborne listeriosis. Amsterdam: Elsevier, 1990:71–4.
5. McLauchlin J, Hall SM, Velani SK, Gilbert RJ. Human listeriosis and pate: a possible association. British Medical Journal 1991;303:773–5.
6. Schuchat A, Deaver K, Wenger JD, et al. Role of foods in sporadic listeriosis: I. Case-control study of dietary risk factors. JAMA 1992;267:2041–5.
7. Pinner R, Schuchat A, Swaminathan B, et al. Role of foods in sporadic listeriosis: II. Microbiologic and epidemiologic investigation. JAMA 1992;267:2046–50.
8. Schwartz B, Ciesielski CA, Broome CV, et al. Association of sporadic listeriosis with consumption of uncooked hot dogs and undercooked chicken. Lancet 1988;2:779–82.

Current Trends

Update: Serologic Testing for Human T-Lymphotropic Virus Type I — United States, 1989 and 1990

Human T-lymphotropic virus type I (HTLV-I)* is a retrovirus that has been identified as a cause of human T-cell leukemia/lymphoma and tropical spastic paraparesis; HTLV-II is closely related to HTLV-I but has not been linked to human illness. Both viruses can be transmitted through blood transfusion and injecting-drug use; therefore, accurate and reliable HTLV-I–antibody test results are essential to diagnose HTLV-I infection, conduct public health surveillance and prevention programs, and improve the safety of blood and blood products collected for transfusion (*1*). During 1989, CDC expanded its Model Performance Evaluation Program (MPEP) to assess the performance of laboratories that conduct HTLV-I–antibody testing and to identify potential problems in the testing process (*2*). This report summarizes findings of CDC's laboratory performance evaluation surveys.

The approximately 300 laboratories enrolled in the MPEP that perform HTLV-I–antibody testing participated in CDC's HTLV-I–antibody testing surveys conducted during October 1989 and April and July 1990. Participating laboratories reported results to CDC after testing coded panels of eight undiluted HTLV-I/II-antibody–negative and HTLV-I/II-antibody–positive samples. The antibody-positive samples were obtained from five persons infected with HTLV-I and 11 infected with HTLV-II. CDC previously had determined the HTLV-I/II-antibody reactivity of these samples through composite testing by using enzyme immunoassay (EIA) kits licensed by the Food and Drug Administration (FDA) and by Western blot (WB) and radioimmunoprecipitation assay (RIPA) antibody tests using the interpretive criteria of the Public Health Service Working Group (*1*). Approximately 98% of the laboratories that participated in each of the three surveys reported EIA results; approximately 10% reported WB test results, and less than 2% reported indirect immunofluorescence or RIPA results (Table 1).

Laboratories that performed HTLV-I–antibody testing were classified into five types: blood bank, hospital, independent, health department, and other (i.e., test-kit manufacturer, sexually transmitted disease clinic, and research, drug-toxicology, and military laboratories). Of the laboratories that returned test results, approximately 80% were from blood banks and hospitals (Table 2).

Laboratory performance was described in terms of analytic sensitivity (i.e., of positive specimens, the proportion that were reactive), analytic specificity (i.e., of negative specimens, the proportion that were nonreactive), and overall analytic performance (i.e., for all specimens tested, the proportion for which test results were correct).

Enzyme immunoassay. In each survey, >80% of the EIA results were reported by blood bank and hospital laboratories. The FDA-licensed Abbott† HTLV-I EIA kit was

*HTLV-I is not closely related to human immunodeficiency virus type 1, does not cause depletion of CD4+ cells, is not associated with immunosuppression, and does not cause acquired immunodeficiency syndrome (*1*).

†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.

HTLV-I — Continued

used by approximately 75% of the laboratories reporting EIA results. From the October 1989 survey to the July 1990 survey, overall EIA analytic sensitivity declined from 99.4% to 96.7% (Table 3). Although the analytic sensitivity for HTLV-I-antibody–positive samples ranged from 99.8% to 100% during all three survey periods, the analytic sensitivity for HTLV-II-antibody–positive samples declined from 99.2% in October 1989 to 95.1% in July 1990. The EIA analytic specificity was more than 98% during all three survey periods. The decline in overall analytic performance from >99% in October 1989 to 97.3% in July 1990 reflected changes in the EIA analytic sensitivity.

Western blot. Approximately 70% of the WB test results were reported by hospital, independent, and other laboratories. The WB tests manufactured either by Biotech or prepared by participating laboratories were used by approximately 70% of the

TABLE 1. Number of laboratories reporting human T-lymphotropic virus type I antibody results, by test method, for three performance evaluation surveys — Model Performance Evaluation Program, 1989 and 1990

	Survey date					
	October 1989 (n* =331)		April 1990 (n=326)		July 1990 (n=323)	
Test method	No.	(%)	No.	(%)	No.	(%)
Enzyme immunoassay	329	(99.4)	323	(99.1)	318	(98.5)
Western blot	35	(10.6)	31	(9.5)	31	(9.6)
Indirect immunofluorescence	5	(1.5)	5	(1.5)	6	(1.9)
Radioimmunoprecipitation assay	3	(0.9)	3	(0.9)	1	(0.3)

*Number of laboratories reporting.

TABLE 2. Types of laboratories reporting human T-lymphotropic virus type I antibody testing results for three performance evaluation surveys — Model Performance Evaluation Program, 1989 and 1990

	Survey date					
	October 1989 (n* =331)		April 1990 (n=326)		July 1990 (n=323)	
Type of laboratory	No.	(%)	No.	(%)	No.	(%)
Blood bank	170	(50.5)	169	(51.8)	166	(51.4)
Hospital	110	(32.6)	104	(31.9)	102	(31.6)
Independent	23	(6.9)	25	(7.7)	24	(7.4)
Health department	12	(3.6)	10	(3.1)	12	(3.7)
Other†	16	(4.8)	18	(5.5)	19	(5.9)

*Number of laboratories reporting.

†This category includes test-kit manufacturers, sexually transmitted disease clinics, and research, drug-toxicology, and military laboratories.

HTLV-I — Continued

laboratories reporting WB results. In all three surveys, the WB analytic specificity was >97%, while the overall WB analytic sensitivity was <65%. The analytic sensitivity for HTLV-I-antibody–positive samples declined from 100% in October 1989 to 94.8% in July 1990. However, because the analytic sensitivity for HTLV-II-antibody–positive samples was ≤50% in the three surveys, the overall WB analytic performance was <76%.

Reported by: Model Performance Evaluation Program, Laboratory Performance Evaluation Section, Laboratory Practice Assessment Br, Div of Laboratory Systems, Public Health Practice Program Office, CDC.

Editorial Note: Although HTLV-II has not been clearly linked with any disease (*3*), a high prevalence of HTLV-II infection has been reported among HTLV-seropositive U.S. injecting-drug users (91%–93%) (*4,5*) and HTLV seropositive U.S. blood donors (50%) (*6*). Because HTLV-I and HTLV-II are closely related, the genome of HTLV-II encodes viral proteins similar to those of HTLV-I causing extensive serologic cross-reactivity. FDA-licensed viral-lysate–based EIAs for HTLV-I do not distinguish HTLV-I from HLTV-II infection; therefore, many repeat-reactive HTLV-I EIA specimens submitted for WB supplemental testing are positive for HTLV-II antibody. Additionally, available but unlicensed HTLV-I WB test kits and reagents cannot distinguish HTLV-I from HTLV-II infection, and HTLV-II-antibody–positive samples frequently are

TABLE 3. Performance measures of laboratories for enzyme immunoassay and Western blot results reported for three performance evaluation surveys in testing for human T-lymphotropic virus type I (HTLV-I) antibody — Model Performance Evaluation Program, 1989 and 1990

	Survey date		
	October 1989 (n* =3218)	April 1990 (n=3177)	July 1990 (n=3112)
Test method/performance measure	(%)	(%)	(%)
Enzyme immunoassay			
Analytic sensitivity, total†	99.4	99.1	96.7
Analytic sensitivity, HTLV-I§	99.8	99.8	100.0
Analytic sensitivity, HTLV-II¶	99.2	98.8	95.1
Analytic specificity**	98.8	99.5	98.3
Overall analytic performance††	99.2	99.3	97.3
	(n=474)	(n=362)	(n=325)
Western blot			
Analytic sensitivity, total†	59.3	64.8	61.7
Analytic sensitivity, HTLV-I§	100.0	95.1	94.8
Analytic sensitivity, HTLV-II¶	37.5	50.0	45.1
Analytic specificity**	97.2	98.3	97.9
Overall analytic performance††	73.6	75.4	72.3

*Number of results reported.

†Of positive HTLV-I and HTLV-II specimens, the proportion that were reactive; WB indeterminate results are combined with nonreactive results.

§Of HTLV-I positive specimens, the proportion that were reactive; WB indeterminate results are combined with nonreactive results.

¶Of HTLV-II positive specimens, the proportion that were reactive; WB indeterminate results are combined with nonreactive results.

**Of negative specimens, the proportion that were nonreactive; WB indeterminate results are combined with reactive results.

††Of all specimens tested, the proportion of "correct" results.

HTLV-I — Continued

interpreted as WB indeterminate. Depending on the sensitivity of the particular WB kit for envelope reactivity, HTLV-I-antibody–positive samples also may be interpreted as WB indeterminate.

The findings in this report for HTLV-I-antibody–positive samples by WB indicated high antibody reactivity to p19, p24, gp46, and/or gp61/68 and were consistently interpreted as seropositive. Because WB kits/reagents available for use during 1989–1990 often did not detect antibody to HTLV-II viral antigens, particularly envelope glycoprotein antigens, indeterminate interpretations were frequently reported for the HTLV-II-antibody–positive samples.

Although most laboratories performed well in testing the performance evaluation samples by EIA, the basis for decline in analytic sensitivity during the three survey periods is unknown; CDC is further analyzing the reported data to identify factors that may have contributed to the decline. In addition, the findings in this report indicate that the unlicensed WB assays used by the laboratories lack sensitivity and specificity in detecting HTLV-II antibody and in discriminating between HTLV-I and HTLV-II infections. However, recent reports indicate that new but unlicensed WB kits containing recombinant envelope antigens demonstrated 100% sensitivity for detecting envelope antibody (*7*). Also, both type-specific synthetic peptides and recombinant proteins recently became available for differentiating HTLV-I from HTLV-II infection (*8,9*); these test kits are not licensed by the FDA.

Because of the clinical importance of HTLV-I, the high prevalence of HTLV-II in high-risk behavior groups (*1*), and the need for precise medical diagnosis of HTLV-infection status for patient counseling, laboratories need licensed WB assays that are more sensitive and specific to detect HTLV-II antibody and to discriminate between HTLV-I and HTLV-II infections.

References

1. CDC. Licensure of screening tests for antibody to human T-lymphotropic virus type I. MMWR 1988;37:736–40,745–7.
2. CDC. Performance evaluation program: testing for human immunodeficiency virus infection. MMWR 1987;36:614.
3. Rosenblatt JD, Golde DW, Wachsman W, et al. A second isolate of HTLV-II associated with atypical hairy-cell leukemia. N Engl J Med 1986;315:372–7.
4. Lee H, Swanson P, Shorty VS, Zack JA, Rosenblatt JD, Chen ISY. High rate of HTLV-II infection in seropositive IV drug abusers in New Orleans. Science 1989;244:471–5.
5. Kwok S, Gallo D, Hanson C, McKinney N, Poiesz B, Sninsky JJ. High prevalence of HTLV-II among intravenous drug abusers: PCR confirmation and typing. AIDS Res Hum Retroviruses 1990;6:561–5.
6. CDC. Human T-lymphotropic virus type I screening in volunteer blood donors—United States, 1989. MMWR 1990;39:915,921–4.
7. Lillehoj EP, Alexander SS, Dubrule CJ, et al. Development and evaluation of a human T-cell leukemia virus type I serologic confirmatory assay incorporating a recombinant envelope polypeptide. J Clin Microbiol 1990;28:2653–8.
8. Lal RB, Heneine W, Rudolph DL, et al. Synthetic peptide-based immunoassays for distinguishing between human T-cell lymphotropic virus type I and type II infections in seropositive individuals. J Clin Microbiol 1991;29:2253–8.
9. Lipka JJ, Santiago P, Chan L, et al. Modified Western blot assay for confirmation and differentiation of human T-cell lymphotropic virus types I and II. J Infect Dis 1991;164:400–3.

Notice to Readers

Postsurgical Infections Associated with Nonsterile Implantable Devices

Two recent cases of postsurgical infection reported to CDC occurred after the implantation of devices labeled and sold as nonsterile. Although there was no evidence that the infections resulted from the implants, these occurrences serve as reminders of the importance of monitoring the sterility of implants.

Because manufacturers may supply implantable devices such as orthopedic (e.g., hip prostheses), cardiovascular (e.g., cardiac valve grafts), and neurologic (e.g., shunts) devices as nonsterile, hospital personnel must ensure that nonsterile devices are adequately sterilized before implantation. The sterilization process used for an implantable device should be closely monitored and documented in the patient's medical record, including the sterilization method; the duration of exposure to the sterilization agent; conditions such as pressure, temperature, chemical concentration, date, time, and biological monitors; and other process indicators.

Steam or ethylene oxide sterilization is recommended for sterilization of implantable devices (*1*). Specific manufacturer recommendations for sterilization of the device should be available in the product packaging; if they are not, hospital personnel should contact the manufacturer for sterilization recommendations and/or to ensure that the sterilization method to be used will not adversely affect device safety and performance. If the information is not available in the product packaging and recommendations cannot be obtained from the manufacturer, the device should not be used.

Adverse effects associated with implantation of implantable devices received from the manufacturer as nonsterile must be reported to the manufacturer, who must report the event to the FDA by mail (Center for Devices and Radiological Health, FDA, FDA User Report, P.O. Box 3002, Rockville, MD 20847-3002) or by fax ([301] 881-6670). User facilities must report deaths related to implanted devices or adverse effects when the manufacturer is unknown directly to the FDA at the above address or by fax ([301] 427-1967]). To ascertain the extent of complications resulting from infections associated with implantable devices labeled as nonsterile, hospital personnel are requested to report these events through state health departments to CDC's Hospital Infections Program, National Center for Infectious Diseases; telephone (404) 639-1550.

Reported by: Center for Devices and Radiological Health, Food and Drug Administration. Hospital Infections Program, National Center for Infectious Diseases, CDC.

Reference

1. Garner JS, Favero MS. Guideline for handwashing and hospital environmental control, 1985. Am J Infect Control 1986;14:110–29.

The *Morbidity and Mortality Weekly Report* (*MMWR*) Series is prepared by the Centers for Disease Control 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.

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☆U.S. Government Printing Office: 1992-631-123/42074 Region IV

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Public Health Service
Centers for Disease Control
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HHS Publication No. (CDC) 92-8017

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