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Current Trends

Medical-Care Expenditures Attributable to Cigarette Smoking — United States, 1993

Cigarette smoking is the most important preventable cause of morbidity and premature mortality in the United States; however, approximately 48 million persons aged ≥18 years are smokers (*1*), and approximately 24 billion packages of cigarettes are purchased annually (*2*). Each year, approximately 400,000 deaths in the United States are attributed to cigarette smoking (*3*) and costs associated with morbidity attributable to smoking are substantial (*4*). To provide estimates for 1993 of smoking-attributable costs for selected categories of direct medical-care expenditures (i.e., prescription drugs, hospitalizations, physician care, home-health care, and nursing-home care), the University of California and CDC analyzed data from the 1987 National Medical Expenditures Survey (NMES-2) and from the Health Care Financing Administration (HCFA). This report summarizes the results of the analysis.

The NMES-2 is a population-based longitudinal survey of the civilian, noninstitutionalized U.S. population (*5*). A cohort of 35,000 persons in 14,000 households was selected for face-to-face interviews four times during February 1987–May 1988. Respondents provided data about sociodemographic factors, health insurance coverage, use of medical care, and medical-care expenditures. Information also was collected about self-reported health status and health-risk behaviors including smoking, safety-belt nonuse, and obesity. The Medical Provider Survey, a supplement to NMES-2, provided confirmation of self-reported medical-care costs and supplied information about costs that survey respondents were unable to report.

To estimate costs attributable to smoking, respondents were categorized as never smokers, former smokers with less than 15 years' exposure, former smokers with 15 or more years' exposure, and current smokers. First, the effect of smoking history on the presence of smoking-related medical conditions (i.e., heart disease, emphysema, arteriosclerosis, stroke, and cancer) was determined. Second, for each of the medical-care expenditure categories, the probability of having any expenditures and the level of expenditures were estimated as a function of smoking, medical conditions, and health status (*6*). All models controlled for age, race/ethnicity, poverty status, *Cigarette Smoking — Continued*

marital status, education level, medical insurance status, region of residence, safety-belt nonuse, and obesity. Data were weighted to project the estimated costs of smoking-attributable medical care to the noninstitutionalized U.S. population. These costs were then adjusted for 1993 by applying the category-specific smoking-attributable percentages to national health-care expenditure data for 1993 reported by HCFA (*7*). Nursing-home costs were estimated by applying the smoking-attributable percentage of hospital expenditures for persons aged ≥65 years to total nursing-home expenditures reported by HCFA. Costs of smoking-attributable medical care also were categorized by source of payment (i.e., self pay, private insurance, Medicare, Medicaid, other federal, other state, and other).

In 1987, the total medical-care expenditures for the five expense categories reported on NMES-2 was $308.7 billion; of this total, an estimated $21.9 billion (7.1%) was attributable to smoking (Table 1). Hospital expenses accounted for most ($11.4 billion) costs attributable to smoking, followed by ambulatory physician care* ($6.6 billion) and nursing-home care ($2.2 billion). Public funding (i.e., Medicare, Medicaid, and other federal and state sources) paid for 43.3% of the medical-care expenditures attributable to smoking (Table 2). The distribution of expenditures by source of payment varied substantially by age group. For persons aged ≥65 years, public funding accounted for 60.6% of smoking-attributable costs, compared with 31.2% for persons aged <65 years.

When the smoking-attributable percentages derived from NMES-2 were applied to HCFA national health-care expenditure data (*6*), estimated smoking-attributable costs for medical care in 1993 were $50.0 billion. Of these costs, $26.9 billion were for hospital expenditures, $15.5 billion for physician expenditures, $4.9 billion for nursing-home expenditures, $1.8 billion for prescription drugs, and $900 million for home-health–care† expenditures.

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Editorial Note: The findings in this report indicate that cigarette smoking accounts for a substantial and preventable portion of all medical-care costs in the United States. For each of the approximately 24 billion packages of cigarettes sold in 1993, approximately $2.06 was spent on medical care attributable to smoking. Of the $2.06, approximately $0.89 was paid through public sources.

From 1987 to 1993, the more than twofold increase in estimated direct medical-care costs attributable to smoking primarily reflect the substantial increase in medical-care expenditures during this period (*7*). In addition, the 1993 HCFA estimate of national health-care expenditures included expenses not covered by NMES-2 (e.g., hospitalization and other medical-care costs for persons too ill to respond to NMES-2).

This analysis controlled for potential confounders such as sociodemographic status, health insurance status, and risk behaviors other than smoking. Previous estimates assumed the difference in medical-care use between smokers and nonsmokers was primarily attributable to smoking and did not account for other associated risk factors that may result in excessive medical expenditures (*4*).

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*Includes hospital-based outpatient and emergency care and care in physicians' offices.
†In 1993, HCFA excluded all but Medicare- and Medicaid-certified care in this category.

TABLE 1. Amount* and percentage of total medical-care expenditures attributable to cigarette smoking, by age group and expenditure category — United States, 1987†

Age	Physician§		Prescription drugs		Hospital		Home-health care¶		Nursing-home care		Total	
group (yrs)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)
19–64	$5,185	(8.3)	$224	(1.8)	$ 6,995	(8.2)	$ 371	(4.9)	NA**	—	**$12,775**	**(7.6)**
≥65	$1,439	(5.9)	$303	(3.9)	$ 4,358	(6.6)	$ 861	(8.6)	$2,156	(6.6)	**$ 9,117**	**(6.5)**
Total	**$6,624**	**(7.7)**	**$527**	**(2.6)**	**$11,353**	**(7.5)**	**$1,232**	**(7.0)**	**$2,156**	**(6.6)**	**$21,892**	**(7.1)**

*In millions. Based on reported medical-care expenditures of $308.7 billion during 1987.
†Weighted data.
§Includes hospital-based outpatient and emergency care and care in physicians' offices.
¶Includes Medicare- and Medicaid-certified services and other reported services.
**Not applicable.

TABLE 2. Amount* and percentage of total medical-care expenditures attributable to cigarette smoking, by age group and source of payment — United States, 1987†

Age	Self pay		Private insurance		Medicare		Medicaid		Other federal		Other state		Other		Total	
group (yrs)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)
19–64	$2,274	(17.8)	$6,119	(47.9)	$ 728	(5.7)	$1,086	(8.5)	$1,571	(12.3)	$600	(4.7)	$396	(3.1)	**$12,775**	**(100)**
≥65	$2,325	(25.5)	$1,185	(13.0)	$3,756	(41.2)	$1,158	(12.7)	$ 520	(5.7)	$ 91	(1.0)	$ 82	(0.9)	**$ 9,117**	**(100)**
Total§	**$4,599**	**(21.0)**	**$7,304**	**(33.4)**	**$4,485**	**(20.4)**	**$2,244**	**(10.2)**	**$2,091**	**(9.5)**	**$692**	**(3.2)**	**$478**	**(2.2)**	**$21,892**	**(100)**

*In millions.
†Weighted data.
§Numbers may not add to totals because of rounding.

Cigarette Smoking — Continued

The smoking-attributable costs described in this report are underestimated for two reasons. First, the cost estimates do not include all direct medical costs attributable to cigarette smoking (e.g., burn care resulting from cigarette-smoking–related fires, perinatal care for low-birthweight infants of mothers who smoke, and costs associated with diseases caused by exposure to environmental tobacco smoke). Second, the indirect costs of morbidity (e.g., due to work loss and bed-disability days) and loss in productivity resulting from the premature deaths of smokers and former smokers were not included in these estimates. In 1990, estimated indirect losses associated with morbidity and premature mortality were $6.9 billion and $40.3 billion, respectively (*3*); these estimates suggest that the total economic burden of cigarette smoking is more than twice as high as the direct medical costs described in this report.

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Epidemiologic Notes and Reports

Risk for Traumatic Injuries from Helicopter Crashes During Logging Operations — Southeastern Alaska, January 1992–June 1993

Helicopters are used by logging companies in the Alaska panhandle to harvest timber in areas that otherwise are inaccessible and/or unfeasible for conventional logging (because of rugged terrain, steep mountain slopes, environmental restrictions, or high cost). The National Transportation Safety Board (NTSB) investigated six helicopter crashes related to transport of logs by cable (i.e., long-line logging*) that occurred in

*A typical long-line logging helicopter carries an approximately 200-foot load cable (i.e., long-line), which is attached by a hook to the underside of the helicopter. A second hook is fixed to the free end of the cable, where a choker cable (an apparatus designed to cinch or "choke" around suspended logs) is connected to one to four logs per load.

Helicopter Crashes — Continued

southeastern Alaska during January 1992–June 1993 and resulted in nine fatalities and 10 nonfatal injuries. This report presents case investigations of these incidents.

Incident Reports

Incident 1. On February 23, 1992, a helicopter crashed while transporting nine loggers. The copilot and five loggers died; five others were seriously injured. The NTSB investigation revealed that a long-line attached to the underside of the helicopter became tangled in the tail rotor during a landing approach, causing an in-flight separation of the tail section (*1*). Passenger flights with long-line and external attachments are illegal (*2*) and violate industry safety standards.

Incident 2. On March 6, 1992, a helicopter crashed while preparing to pick up a load of logs with a long-line. The pilot and copilot were seriously injured. According to the pilot and copilot, the engine failed, and the pilot immediately released the external log load and attempted autorotation[†].

Incident 3. On November 10, 1992, a helicopter crashed while attempting to land at a logging site, sustaining substantial damage. The solo pilot was not injured. NTSB investigation revealed that the helicopter's long-line had snagged on a tree stump during the landing and that the company had no documented training program (*1*).

Incident 4. On February 19, 1993, a helicopter crashed from a 200-foot hover after transporting two logs to a log-drop area. The pilot and copilot were killed. NTSB investigation revealed in-flight metal fatigue of a flight-control piston rod.

Incident 5. On May 2, 1993, a helicopter crashed during an attempted emergency landing after using a long-line to lift a log 1200 feet above ground level followed by rapid descent to a 75-foot hover. The pilot died, and a logger on the ground was injured. NTSB investigation revealed an in-flight separation of the tail rotor and tail rotor gear box from the helicopter. The company had been using a flight procedure that would have heavily loaded the helicopter drive train (*1*).

Incident 6. On May 8, 1993, a helicopter crashed after attempting to lift a log from a logging site with a long-line. The pilot and copilot sustained minor injuries, but the aircraft was substantially damaged. NTSB investigation found that the engine failed because machine nuts had come loose from the engine or its housing and became caught in the engine. The helicopter crashed when the pilot attempted autorotation.

Investigation Findings

Statewide occupational injury surveillance in Alaska through a federal-state collaboration was established in mid-1991, with 1992 being the first full year of comprehensive population-based occupational fatality surveillance for Alaska. During the time these incidents occurred, an estimated 25 helicopters in Alaska were capable of conducting long-line logging operations; approximately 20 were single-engine models from one manufacturer (Federal Aviation Administration [FAA], unpublished data, 1993). Approximately 50 helicopter pilots were employed in long-line logging operations in southeastern Alaska (FAA and Alaska Department of Labor, unpublished

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[†] Autorotation allows a helicopter to make an unpowered descent by maximizing on the windmilling effect and orientation of the main rotor—forward airspeed and altitude can be converted to rotor energy to reduce the rate of descent. Successful autorotation depends on helicopter airspeed and altitude when the maneuver is attempted (*3*). Most helicopters conduct long-line logging operations with minimal or no forward airspeed at less than 400 feet above ground level, while optimal conditions for autorotation require an altitude of at least 500 feet above ground level and airspeed of more than 60 knots per hour.

Helicopter Crashes — Continued

data, 1993). Using these denominators, the events in this report are equivalent to an annual crash rate of 16% (six crashes per 25 helicopters per 18 months), 0.24 deaths per long-line helicopter in service per year (nine deaths per 25 helicopters per 18 months), and an annual fatality rate for long-line logging helicopter pilots of approximately 5000 deaths per 100,000 pilots (four pilot deaths per 50 pilots per 18 months).[§] In comparison, during 1980–1989, the U.S. fatality rate for all industries was 7.0 per 100,000 workers per year; Alaska had the highest overall occupational fatality rate of any state (34.8 per 100,000 per year) for the same period (*4*).

According to NTSB investigations to determine probable cause, all six crashes involved "...improper operational and/or maintenance practices" that reflected a lack of inspections of long-line helicopter logging operations (*1*). In incidents 4, 5, and 6, investigative evidence also indicated that log loads routinely exceeded weight and balance limits for the aircraft. Following increased inspections, no additional logging-related helicopter crashes were reported through June 30, 1994.

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Editorial Note: The incidents in this report demonstrate that long-line helicopter logging is a technology application with an unusually high risk for occupational fatalities. General aviation regulations restrict the number of hours pilots can fly during given time periods; however, long-line helicopter logging involves carrying loads outside the rotorcraft, and there are no legal limitations on crew flight hours. Although flight-crew work schedules and daily flight hours vary greatly by logging company, flight-crew duty periods can exceed 10 hours per day for 10 consecutive days.

Helicopter logging operations often place heavy demands on helicopter machinery and associated equipment. The highly repetitive lift/transport/drop cycles are frequently conducted at or beyond maximum aircraft capacity in remote areas, where rugged terrain, extremely steep mountain slopes (as great as 70 degrees), and adverse weather conditions prevail. Complex operations under such circumstances may increase the likelihood of both human error and machine failure (*5*). In addition, conditions are unfavorable for successful autorotation during most helicopter long-line logging operations.

Regardless of where helicopter logging operations are conducted, the jurisdictional responsibility for inspection rests with the FAA office nearest the main or registered corporate office for the helicopter company (in all of the cases in this report, these offices were in the contiguous United States). This necessitates travel of great distances to conduct helicopter logging inspections, and remote operations may escape or evade inspection for long periods. The NTSB has recommended that operational and maintenance oversight responsibilities for remote sites be assigned to the nearest FAA office (*1*).

[§]These rates refer to the period of intense collaborative investigation and may not represent incidence over a longer period of time; however, they accurately reflect the high risk of helicopter long-line logging during that interval.

Helicopter Crashes — Continued

In response to these incidents, the Alaska Federal-State Interagency Collaborative Working Group on the Prevention of Occupational Traumatic Injuries¶ met in a special session on July 8, 1993, to discuss approaches for reducing the number of such crashes and ameliorating the outcome of crash injuries. Based on these and other findings, the working group made the following recommendations (*6*):

- All helicopter logging pilots and ground crews should receive specific training in long-line operations.
- Companies should follow all manufacturers' recommendations for more frequent helicopter maintenance (because of intensity of use) and for limits on maximum allowable loads.
- Companies should establish and observe appropriate limits on helicopter-crew flight time and duty periods.
- Companies should consider using multi-engine rotorcraft.
- Specific industrywide operating standards and procedures should be developed.
- Companies should provide training in on-site emergency medical care for helicopter logging crews at all work locations.
- State, regional, and local agencies involved in emergency medical services education should make low-cost emergency medical training available to persons likely to work in a helicopter logging environment.
- All flights over water should include appropriate survival equipment for all crew and passengers, who should wear personal flotation devices at all times during flights over water.

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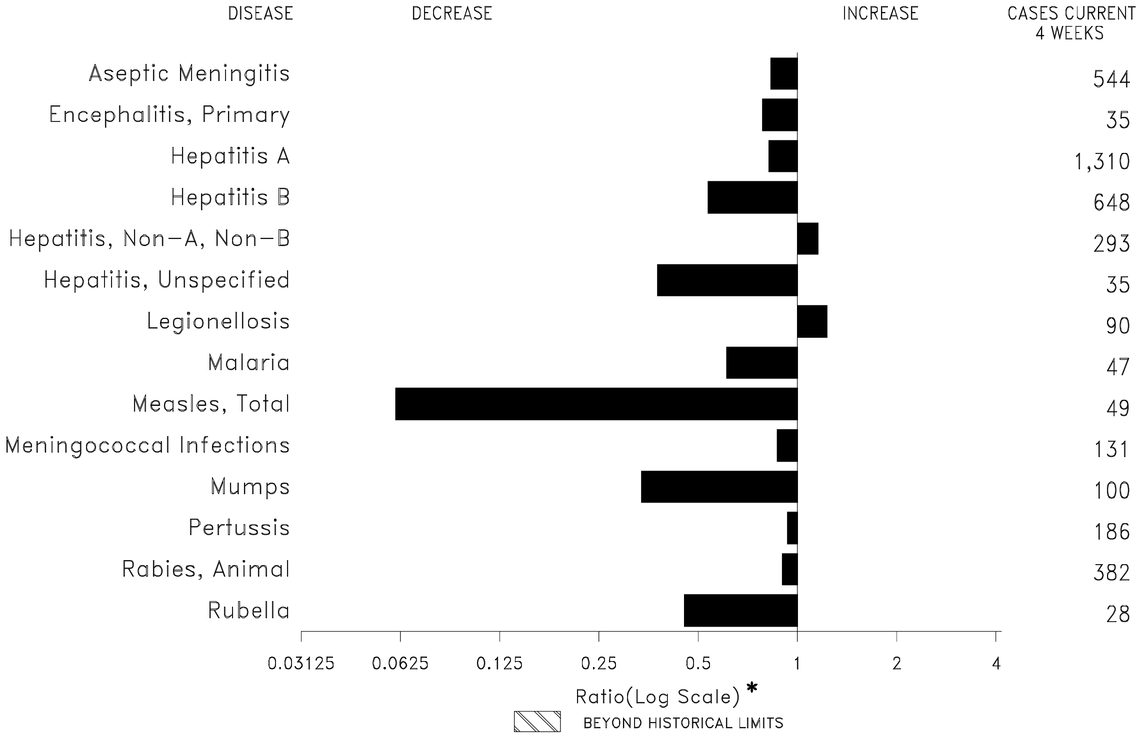
¶Representatives from the Alaska Department of Health and Social Services, Alaska Department of Labor, FAA, CDC's National Institute for Occupational Safety and Health, NTSB, Occupational Safety and Health Administration, U.S. Coast Guard, and the U.S. Forest Service.

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending July 2, 1994, 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 July 2, 1994 (26th Week)

	Cum. 1994		Cum. 1994
AIDS*	37,529	Measles: imported	135
Anthrax	-	indigenous	544
Botulism: Foodborne	33	Plague	7
Infant	33	Poliomyelitis, Paralytic§	-
Other	7	Psittacosis	19
Brucellosis	38	Rabies, human	-
Cholera	9	Syphilis, primary & secondary	10,807
Congenital rubella syndrome	3	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	18
Encephalitis, post-infectious	56	Toxic shock syndrome	108
Gonorrhea	183,399	Trichinosis	24
Haemophilus influenzae (invasive disease)†	604	Tuberculosis	10,404
Hansen Disease	54	Tularemia	24
Leptospirosis	12	Typhoid fever	180
Lyme Disease	2,159	Typhus fever, tickborne (RMSF)	130

*Updated monthly; last update June 28, 1994.
†Of 564 cases of known age, 163 (29%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1994; 3 cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending July 2, 1994, and July 3, 1993 (26th Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	37,529	2,805	274	56	183,399	192,686	10,055	5,542	2,121	219	724	2,159
NEW ENGLAND	1,590	91	8	3	4,099	3,476	162	194	71	15	20	417
Maine	49	9	1	-	48	40	14	9	-	-	-	2
N.H.	32	8	-	2	46	27	8	18	6	-	-	9
Vt.	21	7	-	-	12	14	2	-	-	-	-	2
Mass.	812	31	5	-	1,467	1,402	70	142	53	14	14	76
R.I.	122	36	2	1	231	190	13	4	12	1	6	58
Conn.	554	-	-	-	2,295	1,803	55	21	-	-	-	270
MID. ATLANTIC	8,992	209	21	8	19,523	22,406	584	558	255	3	98	1,318
Upstate N.Y.	1,052	103	12	1	4,905	4,215	282	209	121	1	23	986
N.Y. City	4,639	20	1	-	6,289	7,173	79	41	-	-	-	3
N.J.	2,357	-	-	-	2,571	3,041	154	195	111	-	15	120
Pa.	944	86	8	7	5,758	7,977	69	113	23	2	60	209
E.N. CENTRAL	3,249	433	71	10	35,743	38,641	940	585	163	5	213	31
Ohio	580	103	19	1	11,304	10,015	352	94	13	-	98	21
Ind.	360	69	2	-	4,042	3,987	170	103	4	-	57	6
Ill.	1,602	82	25	3	8,877	13,475	203	98	27	2	5	3
Mich.	527	165	21	6	8,399	8,085	134	196	116	3	37	1
Wis.	180	14	4	-	3,121	3,079	81	94	3	-	16	-
W.N. CENTRAL	830	153	16	3	9,411	10,369	498	303	88	6	77	39
Minn.	213	15	2	-	1,583	1,118	104	39	7	1	-	7
Iowa	29	46	-	-	694	818	27	16	7	4	21	1
Mo.	363	50	5	2	5,238	5,919	209	215	60	1	41	20
N. Dak.	18	1	2	-	14	24	1	-	-	-	3	-
S. Dak.	9	-	2	-	96	145	17	-	-	-	-	-
Nebr.	48	5	3	1	-	484	72	15	4	-	10	8
Kans.	150	36	2	-	1,786	1,861	68	18	10	-	2	3
S. ATLANTIC	8,992	657	55	22	51,121	50,967	662	1,293	359	19	178	241
Del.	122	13	-	-	784	669	11	4	1	-	-	6
Md.	1,079	86	12	2	9,527	7,717	88	173	18	5	50	91
D.C.	763	18	-	1	3,632	2,562	10	20	-	-	5	2
Va.	656	84	14	5	6,507	5,863	73	61	18	2	4	33
W. Va.	23	8	1	-	356	288	5	15	19	-	1	9
N.C.	663	97	27	1	12,584	12,420	58	145	34	-	12	35
S.C.	612	17	-	-	6,156	4,842	20	22	3	-	9	4
Ga.	1,056	27	1	-	-	4,660	23	467	148	-	70	54
Fla.	4,018	307	-	13	11,575	11,946	374	386	118	12	27	7
E.S. CENTRAL	1,031	185	22	1	21,876	21,507	236	542	402	2	36	19
Ky.	161	60	9	1	2,217	2,285	93	47	13	-	5	10
Tenn.	315	34	9	-	6,689	6,738	80	458	381	1	20	6
Ala.	315	71	4	-	7,820	7,418	41	37	8	1	8	3
Miss.	240	20	-	-	5,150	5,066	22	-	-	-	3	-
W.S. CENTRAL	3,972	297	18	1	22,549	21,433	1,449	639	232	46	18	48
Ark.	134	19	-	-	3,354	3,012	29	12	4	1	4	3
La.	614	13	2	-	6,020	5,884	73	90	67	1	3	-
Okla.	156	-	-	-	1,969	2,402	126	157	130	1	8	23
Tex.	3,068	265	16	1	11,206	10,135	1,221	380	31	43	3	22
MOUNTAIN	1,242	84	4	2	4,188	5,694	1,948	269	213	26	44	5
Mont.	15	-	-	-	38	22	14	12	4	-	14	-
Idaho	30	3	-	-	39	98	164	46	48	1	1	1
Wyo.	12	2	-	2	38	44	14	13	74	-	3	1
Colo.	472	26	1	-	1,342	1,901	190	18	20	8	8	-
N. Mex.	92	6	-	-	499	471	588	110	35	7	1	3
Ariz.	349	30	-	-	1,475	2,154	659	20	8	8	2	-
Utah	69	4	-	-	145	71	196	25	15	-	3	-
Nev.	203	13	3	-	612	933	123	25	9	2	12	-
PACIFIC	7,631	696	59	6	14,889	18,193	3,576	1,159	338	97	40	41
Wash.	489	-	-	-	1,386	1,927	178	35	34	1	5	-
Oreg.	324	-	-	-	470	661	198	24	6	1	-	-
Calif.	6,697	611	58	5	12,239	15,098	3,051	1,070	293	93	32	41
Alaska	26	13	1	-	426	255	115	7	-	-	-	-
Hawaii	95	72	-	1	368	252	34	23	5	2	3	-
Guam	1	7	-	-	67	61	12	-	-	4	2	-
P.R.	1,012	16	-	3	263	244	35	156	62	3	-	-
V.I.	12	-	-	-	11	61	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	18	22	4	-	-	-	-	-
C.N.M.I.	-	-	-	-	23	45	3	-	-	-	-	-

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

*Updated monthly; last update June 28, 1994.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending July 2, 1994, and July 3, 1993 (26th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	1994	Cum. 1994	Cum. 1993
UNITED STATES	419	4	544	1	135	199	1,529	34	739	36	1,499	1,756	12	186	118
NEW ENGLAND	30	-	10	-	10	57	72	-	14	7	160	356	7	122	1
Maine	2	-	1	-	3	-	13	-	3	-	2	6	-	-	1
N.H.	3	-	1	-	-	-	6	-	4	-	38	95	-	-	-
Vt.	1	-	-	-	1	31	2	-	-	-	27	44	-	-	-
Mass.	11	-	1	-	4	16	28	-	-	6	72	175	6	120	-
R.I.	5	-	4	-	2	1	-	-	1	1	4	3	-	1	-
Conn.	8	-	3	-	-	9	23	-	6	-	17	33	1	1	-
MID. ATLANTIC	58	2	139	-	15	13	144	3	62	5	304	324	1	9	37
Upstate N.Y.	20	-	14	-	-	1	53	1	17	5	120	78	-	8	6
N.Y. City	11	2	12	-	2	4	10	2	2	-	61	21	1	1	15
N.J.	17	-	109	-	11	8	36	-	6	-	8	39	-	-	7
Pa.	10	-	4	-	2	-	45	-	37	-	115	186	-	-	9
E.N. CENTRAL	43	-	54	-	40	13	229	1	127	3	223	355	2	10	2
Ohio	7	-	15	-	-	5	65	1	40	3	75	106	-	-	1
Ind.	11	-	-	-	1	-	37	-	6	-	36	28	-	-	-
Ill.	12	-	17	-	38	8	82	-	48	-	45	76	-	3	-
Mich.	12	-	19	-	1	-	27	-	29	-	22	17	2	7	-
Wis.	1	-	3	-	-	-	18	-	4	-	45	128	-	-	1
W.N. CENTRAL	23	-	115	-	42	3	111	2	36	3	77	96	-	-	1
Minn.	7	-	-	-	-	-	8	-	4	-	39	43	-	-	-
Iowa	4	-	6	-	1	-	13	-	10	-	6	1	-	-	-
Mo.	10	-	108	-	40	1	54	2	18	1	17	32	-	-	1
N. Dak.	-	-	-	-	-	-	1	-	2	-	3	3	-	-	-
S. Dak.	-	-	-	-	-	-	7	-	-	-	-	1	-	-	-
Nebr.	1	-	-	-	1	-	8	-	2	1	5	5	-	-	-
Kans.	1	-	1	-	-	2	20	-	-	1	7	11	-	-	-
S. ATLANTIC	90	-	7	-	2	22	265	8	111	6	170	145	2	9	6
Del.	3	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Md.	43	-	1	-	1	4	20	6	31	1	53	47	-	-	2
D.C.	8	-	-	-	-	-	2	-	-	-	4	2	-	-	-
Va.	9	-	1	-	1	1	43	1	25	2	17	17	-	-	-
W. Va.	-	-	-	-	-	-	10	-	3	-	2	3	-	-	-
N.C.	2	-	-	-	-	-	40	-	26	-	44	25	-	-	-
S.C.	2	-	-	-	-	-	11	-	6	-	10	5	-	-	-
Ga.	9	-	2	-	-	-	52	-	7	-	12	12	-	-	-
Fla.	14	-	3	-	-	17	85	1	13	3	28	34	2	9	4
E.S. CENTRAL	12	-	28	-	-	1	103	-	15	1	84	75	-	-	-
Ky.	3	-	-	-	-	-	28	-	-	-	52	12	-	-	-
Tenn.	6	-	28	-	-	-	24	-	6	-	16	34	-	-	-
Ala.	2	-	-	-	-	1	45	-	3	-	13	23	-	-	-
Miss.	1	-	-	-	-	-	6	-	6	1	3	6	-	-	-
W.S. CENTRAL	19	2	9	1	6	1	194	9	168	1	52	33	-	7	12
Ark.	1	-	-	-	1	-	32	-	-	-	10	3	-	-	-
La.	3	-	-	-	1	1	23	-	18	1	6	5	-	-	1
Okla.	2	-	-	-	-	-	19	-	22	-	20	12	-	4	1
Tex.	13	2	9	1[†]	4	-	120	9	128	-	16	13	-	3	10
MOUNTAIN	17	-	139	-	12	2	101	1	46	2	110	128	-	4	5
Mont.	-	-	-	-	-	-	3	-	-	-	3	-	-	-	-
Idaho	2	-	-	-	-	-	14	-	5	-	23	16	-	1	1
Wyo.	1	-	-	-	-	-	5	-	1	-	-	1	-	-	-
Colo.	5	-	13	-	1	2	15	-	2	2	31	58	-	-	-
N. Mex.	3	-	-	-	-	-	11	N	N	-	9	21	-	-	-
Ariz.	1	-	-	-	-	-	38	-	24	-	33	19	-	-	1
Utah	4	-	126	-	-	-	11	1	7	-	9	13	-	2	2
Nev.	1	-	-	-	11	-	4	-	6	-	2	-	-	1	1
PACIFIC	127	-	43	-	8	87	310	10	160	8	319	244	-	25	54
Wash.	4	-	-	-	-	-	22	-	4	-	15	23	-	-	-
Oreg.	7	-	-	-	-	-	48	N	N	2	25	3	-	-	1
Calif.	106	-	43	-	6	71	233	10	145	5	272	212	-	22	32
Alaska	-	-	-	-	-	-	2	-	2	-	-	3	-	1	1
Hawaii	10	-	-	-	2	16	5	-	9	1	7	3	-	2	20
Guam	1	U	211	U	-	2	1	U	4	U	-	-	U	1	-
P.R.	2	-	13	-	-	286	6	-	2	-	1	1	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	1	-	-	1	-	1	2	-	-	-
C.N.M.I.	1	U	26	U	-	1	-	U	2	U	-	-	U	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable [†] International [§] Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending July 2, 1994, and July 3, 1993 (26th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	10,807	13,466	108	10,404	10,443	24	180	130	2,937
NEW ENGLAND	118	189	2	216	225	-	13	5	923
Maine	4	3	-	-	5	-	-	-	-
N.H.	1	18	-	11	10	-	-	-	96
Vt.	-	1	1	3	3	-	-	-	80
Mass.	47	86	1	110	135	-	9	5	360
R.I.	9	6	-	18	34	-	1	-	5
Conn.	57	75	-	74	38	-	3	-	382
MID. ATLANTIC	640	1,330	18	1,880	2,184	-	49	-	316
Upstate N.Y.	89	116	8	112	316	-	6	-	79
N.Y. City	295	666	-	1,238	1,339	-	29	-	-
N.J.	104	202	-	368	205	-	14	-	149
Pa.	152	346	10	162	324	-	-	-	88
E.N. CENTRAL	1,390	2,264	22	1,035	1,110	1	32	21	20
Ohio	569	614	7	160	151	-	4	12	-
Ind.	118	194	2	87	115	-	2	2	4
Ill.	388	887	4	523	583	-	17	5	3
Mich.	161	330	9	230	215	1	3	2	7
Wis.	154	239	-	35	46	-	6	-	6
W.N. CENTRAL	604	879	17	269	231	12	-	10	102
Minn.	25	39	1	55	30	-	-	-	12
Iowa	28	40	7	20	25	-	-	1	45
Mo.	521	702	5	125	120	8	-	2	9
N. Dak.	-	2	-	4	5	-	-	-	4
S. Dak.	-	1	-	15	10	1	-	6	11
Nebr.	-	10	2	10	12	1	-	1	-
Kans.	30	85	2	40	29	2	-	-	21
S. ATLANTIC	3,137	3,501	6	1,982	2,141	-	26	59	957
Del.	13	69	-	-	21	-	1	-	21
Md.	117	192	-	160	181	-	4	4	305
D.C.	128	194	-	53	82	-	1	-	2
Va.	397	316	1	176	237	-	5	4	196
W. Va.	8	4	-	42	43	-	-	2	42
N.C.	899	991	1	237	262	-	-	21	89
S.C.	374	538	-	202	213	-	-	2	88
Ga.	755	588	-	440	380	-	1	23	193
Fla.	446	609	4	672	722	-	14	3	21
E.S. CENTRAL	1,876	1,873	2	659	767	-	2	9	93
Ky.	108	156	1	167	185	-	1	-	4
Tenn.	489	540	1	207	229	-	1	6	34
Ala.	359	406	-	211	237	-	-	1	55
Miss.	920	771	-	74	116	-	-	2	-
W.S. CENTRAL	2,474	2,596	1	1,285	872	7	9	18	363
Ark.	260	310	-	142	82	6	-	2	15
La.	907	1,215	-	14	-	-	4	-	43
Okla.	83	184	1	136	80	1	1	13	19
Tex.	1,224	887	-	993	710	-	4	3	286
MOUNTAIN	146	124	4	230	269	3	6	8	39
Mont.	1	1	-	9	5	1	-	4	-
Idaho	5	-	1	6	7	-	-	-	-
Wyo.	-	4	-	3	2	-	-	2	12
Colo.	73	35	1	1	42	-	2	1	-
N. Mex.	9	19	-	37	35	1	-	-	2
Ariz.	30	52	-	108	116	-	1	1	23
Utah	5	1	2	22	11	1	1	-	-
Nev.	23	12	-	44	51	-	2	-	2
PACIFIC	422	710	36	2,848	2,644	1	43	-	124
Wash.	32	28	-	151	131	-	3	-	-
Oreg.	19	30	-	81	53	1	-	-	-
Calif.	367	647	33	2,438	2,287	-	38	-	95
Alaska	3	3	-	33	33	-	-	-	29
Hawaii	1	2	3	145	140	-	2	-	-
Guam	4	2	-	18	33	-	1	-	-
P.R.	159	279	-	33	111	-	-	-	43
V.I.	22	27	-	-	2	-	-	-	-
Amer. Samoa	1	-	-	3	1	-	1	-	-
C.N.M.I.	1	3	-	22	19	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending July 2, 1994 (26th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	619	427	105	45	23	19	57
Boston, Mass.	176	101	37	21	9	8	24
Bridgeport, Conn.	35	22	5	5	2	1	1
Cambridge, Mass.	19	14	3	2	-	-	1
Fall River, Mass.	22	19	3	-	-	-	1
Hartford, Conn.	60	36	11	5	5	3	2
Lowell, Mass.	31	20	10	1	-	-	3
Lynn, Mass.	12	10	2	-	-	-	-
New Bedford, Mass.	19	17	1	-	1	-	3
New Haven, Conn.	31	20	5	3	2	1	1
Providence, R.I.	56	47	6	2	1	-	6
Somerville, Mass.	8	6	1	1	-	-	1
Springfield, Mass.	50	35	11	1	1	2	3
Waterbury, Conn.	35	23	7	3	2	-	4
Worcester, Mass.	65	57	3	1	-	4	7
MID. ATLANTIC	2,497	1,563	531	292	68	43	102
Albany, N.Y.	49	30	12	2	1	4	6
Allentown, Pa.	18	10	5	3	-	-	-
Buffalo, N.Y.	83	53	16	6	5	3	1
Camden, N.J.	24	9	5	3	5	2	-
Elizabeth, N.J.	12	7	3	2	-	-	-
Erie, Pa.§	39	28	6	2	1	2	3
Jersey City, N.J.	59	33	10	9	2	5	-
New York City, N.Y.	1,306	792	300	176	25	13	40
Newark, N.J.	65	27	16	15	6	1	7
Paterson, N.J.	42	27	8	7	-	-	-
Philadelphia, Pa.	394	246	86	46	11	5	21
Pittsburgh, Pa.§	62	47	9	-	4	2	4
Reading, Pa.	19	12	4	2	1	-	-
Rochester, N.Y.	120	87	23	6	2	2	11
Schenectady, N.Y.	31	26	3	2	-	-	2
Scranton, Pa.§	24	19	5	-	-	-	-
Syracuse, N.Y.	87	65	13	2	5	2	6
Trenton, N.J.	34	20	5	7	-	2	-
Utica, N.Y.	12	9	2	1	-	-	-
Yonkers, N.Y.	17	16	-	1	-	-	1
E.N. CENTRAL	2,184	1,348	401	242	132	61	128
Akron, Ohio	41	33	4	3	-	1	-
Canton, Ohio	35	30	4	-	1	-	3
Chicago, Ill.	486	179	84	112	95	16	50
Cincinnati, Ohio	134	90	20	12	6	6	10
Cleveland, Ohio	151	102	31	10	3	5	3
Columbus, Ohio	146	88	31	17	7	3	7
Dayton, Ohio	117	85	20	9	1	2	4
Detroit, Mich.	280	166	64	33	5	12	7
Evansville, Ind.	49	36	11	2	-	-	2
Fort Wayne, Ind.	54	33	13	6	-	2	6
Gary, Ind.	21	12	4	4	1	-	-
Grand Rapids, Mich.	52	32	11	5	2	2	4
Indianapolis, Ind.	172	122	33	10	3	4	13
Madison, Wis.	57	45	7	4	1	-	5
Milwaukee, Wis.	146	112	25	5	2	2	6
Peoria, Ill.	50	40	4	1	1	4	-
Rockford, Ill.	48	36	7	4	-	1	2
South Bend, Ind.	49	36	8	3	2	-	1
Toledo, Ohio	96	71	20	2	2	1	5
Youngstown, Ohio	U	U	U	U	U	U	U
W.N. CENTRAL	710	474	114	73	25	24	52
Des Moines, Iowa	73	26	23	16	7	1	2
Duluth, Minn.	25	21	2	-	-	2	1
Kansas City, Kans.	35	25	7	2	1	-	2
Kansas City, Mo.	111	76	20	11	1	3	3
Lincoln, Nebr.	20	16	1	2	-	1	2
Minneapolis, Minn.	144	92	22	17	9	4	19
Omaha, Nebr.	78	49	11	9	3	6	7
St. Louis, Mo.	107	82	11	10	2	2	11
St. Paul, Minn.	55	43	12	-	-	-	3
Wichita, Kans.	62	44	5	6	2	5	2
S. ATLANTIC	1,346	829	299	147	44	27	70
Atlanta, Ga.	157	88	35	23	6	5	4
Baltimore, Md.	272	170	63	28	6	5	21
Charlotte, N.C.	85	51	22	8	3	1	4
Jacksonville, Fla.	135	71	35	21	6	2	5
Miami, Fla.	85	59	13	12	1	-	-
Norfolk, Va.	75	48	16	6	4	1	2
Richmond, Va.	66	46	12	4	4	-	2
Savannah, Ga.	54	34	12	6	2	-	2
St. Petersburg, Fla.	43	30	6	4	1	2	5
Tampa, Fla.	198	136	45	10	4	3	17
Washington, D.C.	171	93	39	24	7	8	8
Wilmington, Del.	5	3	1	1	-	-	-
E.S. CENTRAL	758	475	164	66	28	25	43
Birmingham, Ala.	101	56	24	8	6	7	2
Chattanooga, Tenn.	62	40	13	5	3	1	4
Knoxville, Tenn.	96	65	21	9	1	-	9
Lexington, Ky.	76	53	11	8	1	3	7
Memphis, Tenn.	151	100	28	9	12	2	10
Mobile, Ala.	87	53	18	8	1	7	7
Montgomery, Ala.	52	32	11	5	2	2	1
Nashville, Tenn.	133	76	38	14	2	3	3
W.S. CENTRAL	1,471	888	310	168	57	48	63
Austin, Tex.	74	44	18	11	1	-	5
Baton Rouge, La.	51	30	15	3	3	-	3
Corpus Christi, Tex.	49	36	7	3	1	2	2
Dallas, Tex.	190	102	46	23	15	4	3
El Paso, Tex.	59	41	6	6	-	6	6
Ft. Worth, Tex.	127	79	28	7	6	7	2
Houston, Tex.	415	222	100	65	14	14	21
Little Rock, Ark.	73	49	12	7	3	2	3
New Orleans, La.	71	47	13	8	1	2	-
San Antonio, Tex.	207	133	39	21	5	9	7
Shreveport, La.	56	32	9	9	5	1	6
Tulsa, Okla.	99	73	17	5	3	1	5
MOUNTAIN	693	457	125	66	24	21	48
Albuquerque, N.M.	98	63	18	11	5	1	3
Colo. Springs, Colo.	35	20	10	1	1	3	9
Denver, Colo.	120	82	17	13	2	6	8
Las Vegas, Nev.	U	U	U	U	U	U	U
Ogden, Utah	17	9	5	2	-	1	3
Phoenix, Ariz.	191	127	29	24	4	7	17
Pueblo, Colo.	18	14	3	1	-	-	2
Salt Lake City, Utah	92	55	16	9	9	3	2
Tucson, Ariz.	122	87	27	5	3	-	4
PACIFIC	1,730	1,172	293	173	52	34	119
Berkeley, Calif.	U	U	U	U	U	U	U
Fresno, Calif.	112	74	11	13	5	9	7
Glendale, Calif.	20	13	5	-	2	-	1
Honolulu, Hawaii	69	52	9	7	-	1	5
Long Beach, Calif.	U	U	U	U	U	U	U
Los Angeles, Calif.	419	276	65	54	14	4	24
Pasadena, Calif.	32	21	7	1	3	-	4
Portland, Oreg.	130	91	25	10	1	3	2
Sacramento, Calif.	134	92	21	12	8	1	9
San Diego, Calif.	367	258	64	35	8	2	40
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	164	110	34	13	5	2	9
Santa Cruz, Calif.	33	23	6	3	1	-	4
Seattle, Wash.	133	81	24	18	2	8	7
Spokane, Wash.	41	32	6	-	1	2	5
Tacoma, Wash.	76	49	16	7	2	2	2
TOTAL	12,008¶	7,633	2,342	1,272	453	302	682

*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.

Current Trends

Rapid Assessment of Vectorborne Diseases During the Midwest Flood — United States, 1993

Heavy spring and summer rainfall during 1993 caused the most extensive flash and riverine flooding ever recorded in the upper midwestern United States. In portions of the flood region,* standing water provided large expanses of habitat capable of producing large populations of the mosquitoes *Culex pipiens* and *Cx. tarsalis*. These species can rapidly amplify transmission of the arboviruses that cause St. Louis encephalitis (SLE) and western equine encephalitis (WEE). Although information from state health departments in the disaster area indicated minimal SLE or WEE activity in the region before the flooding, large vector populations in certain areas following the flooding increased the potential for exposure of residents and emergency workers to arboviral infection. To determine the risk for arboviral disease in the disaster area, CDC, in collaboration with state and local health departments, conducted surveillance during August–September 1993. This report summarizes the results of the surveillance activity.

The risk for SLE or WEE amplification was low in the northern part of the flood region because flooding occurred during late summer, vector population densities were moderate, and nighttime temperatures were below 50 F (10 C). To verify the low risk, mosquito-based surveillance was conducted in Iowa, Minnesota, Nebraska, North Dakota, and South Dakota during August 2–7. Because larger mosquito populations and higher average temperatures (that may facilitate virus amplification) were observed in the southern part of the flood region, intensive surveillance for SLE and WEE was conducted in Illinois, Iowa, Kansas, and Missouri from August 1 through September 21. Mosquitoes were collected in carbon dioxide-baited light traps and sorted by species. Known vector species were grouped into pools of up to 100 mosquitoes and tested for the presence of SLE antigen (using an antigen-capture enzyme-linked immunosorbent assay) and/or WEE virus (using a Vero cell culture plaque assay).

WEE virus was detected in one pool of *Cx. tarsalis* collected in Deuel County, South Dakota; no evidence of SLE activity was detected in any of the 186,501 mosquitoes tested from throughout the region (Table 1). In Iowa, state-based sentinel chicken surveillance revealed no evidence of SLE or WEE activity. In Illinois, state-based wild bird surveillance identified SLE virus in one of 2073 birds tested. Two human cases of SLE were reported from the nine-state area; one occurred within the disaster area. Sporadic cases of SLE frequently occur in the Midwest; these cases were not related to flooding in 1993. Because surveillance data indicated minimal risk for arboviral disease above background levels in the disaster area, contingency plans for large-scale mosquito adulticiding were not implemented.

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*Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Vectorborne Diseases — Continued

TABLE 1. Mosquitoes tested for arboviruses in states affected by the Midwest floods — August 2–7, 1993

State	No. pools	No. mosquitoes	Positive pools (SLE/WEE*)
Illinois	618	30,900	0/†
Iowa	20	1,230	0/0
Kansas	139	6,258	0/0
Minnesota	45	3,505	0/0
Missouri	1,759	123,863	0/†
Nebraska	31	2,082	0/0
North Dakota	53	3,502	0/0
South Dakota	172	15,161	0/1
Total	**2,837**	**186,501**	

*St. Louis encephalitis/western equine encephalitis.
†Not done.

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Editorial Note: Although natural disasters that result in flooding often are followed by a proliferation of mosquitoes, in the United States such disasters are rarely followed immediately by epidemics of arboviral disease. Surveillance data in this report confirmed that, in 1993, flood-related risk for epidemic mosquitoborne arboviral infections was low in the upper midwestern United States.

Despite the presumed low risk for mosquitoborne arboviral disease after flood-related natural disasters, surveillance for arboviruses can assist in determining prevalence in large vector populations and the need for mosquito control. Because the 1993 Midwest flood was more widespread than previous floods in the region, the risk for arboviral disease was unknown. Surveillance provided an accurate determination of the risk for transmission of arboviral infection and obviated the expense of large-scale mosquito control. For example, the total allocation for arbovirus surveillance in the disaster area was approximately $390,000 (range: $32,275 [Illinois] to $150,000 [Missouri]). If surveillance had not been implemented in the area, prophylactic mosquito control most likely would have been conducted. The estimated cost of mosquito control for the St. Louis metropolitan area alone was $1.6 million. If other metropolitan areas in the flood region also were treated, the total estimated cost of prophylactic mosquito control would have exceeded $10 million. These findings suggest that arbovirus surveillance programs to determine public health risk can prevent unnecessary expenditures associated with application of insecticides.

In addition to large-scale application of insecticides, the primary public health interventions to prevent mosquitoborne arboviral outbreaks include community alerts that warn residents to avoid mosquito exposure during twilight hours by staying inside screened or air-conditioned buildings or by using repellents or other personal protection measures. The decision to use large-scale application of insecticides to reduce vector population densities is complex and depends on many factors, including detection of early-season arbovirus transmission, indicating increased risk for human infection. Timely intervention, however, requires an active program of mosquito and avian surveillance and appropriate mosquito-control measures.

Reasons also may exist for emergency control of mosquitoes that are not related to disease transmission after a disaster. Pest (i.e., nonvector) mosquito species may cause severe nuisance problems that compromise emergency-response operations. CDC recommends control of pest mosquitoes when 1) emergency-response or reconstruction efforts are substantially hampered by large populations of mosquitoes, 2) normal civil services (e.g. police, fire, emergency medical services, power, and water and sewage services) in the disaster area are substantially disrupted, or 3) large nuisance mosquito populations place additional stress on the human population (*1*). Surveillance protocols and control methods vary by the mosquito species. Decisions to control pest mosquitoes are based on criteria that differ from those to control vector mosquitoes. No large-scale emergency control of pest mosquitoes was conducted in the 1993 flood disaster.

In the disaster area, the risk for epidemic transmission of arboviruses during 1994 is being monitored by human, bird, and mosquito surveillance. Winter snows and spring rains contributed to flooding and standing water in some areas of the midwestern United States that experienced flooding in 1993. As a result, mosquitoes in these localities may be more abundant than usual during the 1994 arbovirus transmission season.

Reference

1. CDC. Emergency mosquito control associated with Hurricane Andrew—Florida and Louisiana, 1992. MMWR 1993;42:240–2.

Notice to Readers

Adult Blood Lead Epidemiology and Surveillance — United States, 1992–1994

CDC's National Institute for Occupational Safety and Health Adult Blood Lead Epidemiology and Surveillance program (ABLES) monitors elevated blood lead levels (BLLs) among adults in the United States (*1*). Twenty-two states currently report surveillance results to ABLES. Beginning in 1993, ABLES began detecting both new cases and persons with multiple reports over time. In this report, ABLES provides data for the first quarter of 1994 and compares annual data for 1993 and 1992.

During January 1–March 31, 1994, the number of reports of elevated BLLs increased over those reported for the same period in both 1992 and 1993 in all reporting categories (Table 1); this increase is consistent with the increase from 1992 to 1993 in total annual BLL reports (*2*). The number of reports of adults with elevated BLLs reflects monitoring practices by employers. Variation in national quarterly reporting totals, especially first-quarter totals, may result from 1) changes in the number of par-

Notices to Readers — Continued

ticipating states; 2) timing of receipt of laboratory BLL reports by state-based surveillance programs; and 3) interstate differences in worker BLL testing by lead-using industries.

The reported number of adults with elevated BLLs increased from 8886 in 1992 to 11,240 in 1993 (Table 2); this increase resulted in part from a net gain of two reporting states (three additions and one deletion) to ABLES in 1993. A total of 6584 new case reports* accounted for 59% of the total cases (11,240) reported during 1993.

* At least one report of an adult with an elevated BLL (≥25 µg/dL) who had not been reported previously in 1992. Of the newly reported cases in 1993, 257 (4%) were reported by new ABLES states (for which all cases are considered new).

TABLE 1. Reports of elevated blood lead levels (BLLs) among adults — 22 states,* first quarter, 1992–1994

Reported BLL (µg/dL)	First quarter, 1994		Reports, first quarter 1993§	Reports, first quarter 1992¶
	No. reports	No. persons†		
25–39	4086	3295	3360	3475
40–49	1370	1014	846	904
50–59	275	202	162	221
≥60	116	86	79	86
Total	**5847**	**4597**	**4447**	**4686**

*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 the individual during the given quarter.

§Data for first quarter 1993 were 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 on number of persons with elevated BLLs are unavailable.

¶Data for first quarter 1992 were reported from 12 states (Alabama, California, Connecticut, Illinois, Iowa, Maryland, Massachusetts, New Jersey, New York, Oregon, Texas, and Wisconsin). Data on number of persons with elevated BLLs are unavailable.

TABLE 2. Reports of new cases of elevated blood lead levels (BLLs) among adults — 20 states*, 1993

Highest BLL (µg/dL)	No. reports*	No. persons†	New cases§ No.	New cases§ (%)
25–39	17,045	8,041	4,693	(58)
40–49	5,189	2,293	1,288	(56)
50–59	1,208	627	419	(67)
≥60	583	279	184	(66)
Total	**24,025**	**11,240**	**6,584**	**(59)**

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

†Individual reports are categorized according to the highest reported BLL for the individual during the given year.

§Reported by Alabama, California, Colorado, Connecticut, Illinois, Iowa, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Texas, Utah, and Wisconsin.

Notices to Readers — Continued

Fifty-two percent of persons reported in 1992 were reported again to the system during 1993. Reasons for repeat reports of elevated BLLs include 1) recurring exposure resulting from lack of existing control measures and inapropriate worker-protection practices; 2) routine tracking of elevated employee BLLs below the medical removal limits; and 3) increased employer monitoring during medical removal. Increased testing of workers in construction trades—as new workplace medical-monitoring programs are established to comply with new Occupational Safety and Health Administration regulations (*3*)—also may partially explain increases in reports of elevated BLLs.

These data suggest that work-related lead exposure is an ongoing occupational health problem in the United States. By expanding the number of participating states, reducing variability in reporting, and distinguishing between new and recurring elevated BLLs in adults, ABLES can enhance surveillance for this preventable condition.

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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, fourth quarter, 1993. MMWR 1994;43:246–7.
3. Office of the Federal Register. Code of federal regulations: occupational safety and health standards. Subpart Z: toxic and hazardous substances—lead. Washington DC: Office of the Federal Register, National Archives and Records Administration, 1993. (29 CFR section 1926, part II).

Notice to Readers

Availability of Version 6 of Epi Info

The Epi Info computer programs produced by CDC and the World Health Organization provide public-domain software for word processing, database management, and statistics work in public health; more than 40,000 documented copies of Version 5 are in use in 117 countries. Version 6 of Epi Info was released in June 1994.

Notices to Readers — Continued

Version 6 features a configurable pull-down menu, facilities for producing and using hypertext (active text), additional statistics, and many programming improvements. As with previous versions, it runs on IBM*-compatible computers under DOS and requires 640 K of memory (RAM), although use of a hard disk is recommended.

A 600-page manual is included on the disks and is available in printed form. Copies of Epi Info and a companion program for geographic mapping (Epi Map) are available from USD, Inc., 2075A West Park Place, Stone Mountain, GA 30087; telephone (404) 469-4098; fax (404) 469-0681. There are charges for Epi Info and Epi Map.

Epi Info and Epi Map are available on the worldwide Internet using the following access information: Site: FTP.CDC.GOV; User ID: anonymous; Directory for Epi Info: /PUB/EPI/EPIINFO; Directory for Epi Map: /PUB/EPI/EPIMAP. The compressed files occupy 3–4 megabytes for each product.

*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.

Notice to Readers

NIOSH Alert: Request for Assistance in Preventing Organic Dust Toxic Syndrome

CDC's National Institute for Occupational Safety and Health (NIOSH) periodically issues alerts on workplace hazards that have caused death, serious injury, or illness to workers. One such alert, *Request for Assistance in Preventing Organic Dust Toxic Syndrome* (*1*), was recently published and is available to the public.*

This alert warns agricultural workers who inhale contaminated organic dust that they can develop serious respiratory illness. One of the most common illnesses is organic dust toxic syndrome (ODTS), a respiratory and systemic illness that can follow exposures to heavy concentrations of organic dusts contaminated with microorganisms. An estimated 30%–40% of workers exposed to such organic dusts will develop ODTS. The alert describes four incidents in which 29 agricultural workers developed ODTS. Also described are the various medical conditions that ODTS includes and the health effects associated with the syndrome. The alert provides recommendations for minimizing the risk for exposure to organic dusts and for the use of respirators.

Reference

1. NIOSH. Request for assistance in preventing organic dust toxic syndrome. Cincinnati: US Department of Health and Human Services, Public Health Service, CDC, 1994; DHHS publication no. (NIOSH)94-102.

*Single copies of this document are available without charge from the Publications Office, Division of Standards Development and Technology Transfer, NIOSH, CDC, Mailstop C-13, 4676 Columbia Parkway, Cincinnati, OH 45226-1998; telephone (800) 356-4674 ([513] 533-8328 for persons outside the United States); fax (513) 533-8573.

Notice to Readers

1995 Symposium on Statistical Methods

CDC and the Agency for Toxic Substances and Disease Registry; the Atlanta chapter of the American Statistical Association; the Biostatistics Division, Emory University School of Public Health; and the Department of Statistics, University of Georgia, will cosponsor a statistical methods symposium entitled "Small Area Statistics in Public Health: Design, Analysis, Graphic and Spatial Methods" January 25–26, 1995, in Atlanta. A short course, "Geographic Information Systems: Concepts and Perspectives for Small Area Analysis in Public Health," will be offered January 24, 1995, in conjunction with the symposium.

The symposium will include invited plenary presentations and contributed papers. Abstracts will be accepted in the following areas: "borrowed strength" methods for small-area estimation; use of small-area statistics in environmental health issues; small-area statistics and ethnic subpopulations; estimation and forecasting from small samples; detection of temporal and spatial trends in disease patterns; geographic information systems; mapping and graphic methods for public health research; and confidentiality and data-accessibility issues. Abstracts should be postmarked no later than August 1, 1994.

Abstract, registration, and cost information is available from CDC's Division of Surveillance and Epidemiology, Epidemiology Program Office, Mailstop C-08, 1600 Clifton Road, NE, Atlanta, GA 30333; telephone (404) 639-0080. Additional information regarding scientific content of the symposium is available from the Chair, 1995 CDC and ATSDR Symposium on Statistical Methods, telephone (404) 488-4300 (Internet: SJS1@CEHEHL1.EM.CDC.GOV).

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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