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Vibrio vulnificus Infections Associated with Eating Raw Oysters — Los Angeles, 1996

Of all foodborne infectious diseases, infection with *Vibrio vulnificus* is one of the most severe; the case-fatality rate for *V. vulnificus* septicemia exceeds 50% (*1,2*). In immunocompromised hosts, *V. vulnificus* infection can cause fever, nausea, myalgia, and abdominal cramps 24–48 hours after eating contaminated food; because the organism can cross the intestinal mucosa rapidly, sepsis and cutaneous bullae can occur within 36 hours of the initial onset of symptoms. Cases are most commonly reported during warm-weather months (April–November), and often are associated with eating raw oysters. During April 1993–May 1996, a total of 16 cases of *V. vulnificus* infection were reported in Los Angeles County. Fifteen (94%) of these patients were primarily Spanish-speaking, 12 (75%) had preexisting liver disease (associated with alcohol use or viral hepatitis), all were septicemic, and all had eaten raw oysters 1–2 days before onset of symptoms. In May 1996, three deaths related to *V. vulnificus* infection among primarily Spanish-speaking persons were reported to the Los Angeles County Department of Health Services (LACDHS). This report summarizes the findings of the investigations of these fatal cases and illustrates the importance of prevention strategies for persons with preexisting liver disease.

Case Investigations

Case 1. On May 1, 1996, a 38-year-old man had onset of fever, chills, nausea, and myalgia. On April 29, he had eaten at home raw oysters purchased from a retail store. On May 2, he was admitted to a hospital because of a fever of 102 F (39 C) and two circular necrotic lesions on the left leg. He reported a history of regular beer consumption (36–72 oz per day) and insulin-dependent diabetes. Sepsis and possible deep-vein thrombosis were diagnosed, and the patient was transferred to the intensive-care unit (ICU). In the ICU, therapy was initiated with ticarcillin/clavulanic acid, gentamicin, vancomycin, and ceftazidime. On May 3, *V. vulnificus* was isolated from the blood sample obtained from the patient on admission, and ciprofloxacin was added to his therapy. On May 4, he died. Traceback of the oysters by environmental health inspectors indicated they originated from a lot harvested in Galveston Bay, Texas, on April 27.

Case 2. On May 10, a 46-year-old man had onset of fever, sweats, and nausea. On May 9, he had eaten at home raw oysters purchased from a retail store. On May 11, he

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was admitted to a hospital because of a fever of 101.5 F (38.5 C), jaundice, and ascites. He reported a history of heavy alcohol use (72 oz of beer per day) and alcoholic liver disease; in 1995, he had had jaundice for 1 month and had cirrhosis diagnosed. In the hospital, sepsis of unknown etiology was diagnosed, and he was transferred to the ICU; therapy was initiated with piperacillin and gentamicin. On May 12, he died. *V. vulnificus* was isolated from samples of blood and peritoneal fluid obtained on admission. Traceback of the oysters by environmental health inspectors indicated they originated from a lot harvested in Galveston Bay on May 4; however, harvesters associated with case 1 were different from those for case 2.

Case 3. On May 20, a 51-year-old woman had onset of fever, nausea, and muscle aches. On May 19, she had eaten raw oysters served at a party. On May 21, she was admitted to a hospital because of a fever of 105 F (40.5 C) and bilateral leg cellulitis. In 1982, she had had breast cancer diagnosed and in 1986, chronic hepatitis C. Following the cellulitis, hemorrhagic bullous lesions developed, then septic shock, and the patient was transferred to the ICU. Therapy was initiated with ticarcillin/clavulanic acid and one dose each of ciprofloxacin and doxycycline. On May 22, she died. *V. vulnificus* was isolated from blood and wound cultures obtained on admission. Traceback of the oysters by environmental health inspectors indicated they originated from a lot harvested in Eloi Bay, Louisiana, on May 14.

Follow-Up Investigation

During the investigation of cases 1–3, no implicated oysters were available for analysis. Because *V. vulnificus* is present in up to 50% of oyster beds with the water conditions that prevail in the Gulf of Mexico during warm months (i.e., temperature >68 F [>20 C] and salinity of <16 parts per thousand) (*3*), no oysters from these waters were obtained for analysis following the tracebacks. Other than ingestion of oysters, no other known source of exposure to *V. vulnificus* (e.g., ingestion of other raw shellfish or skin exposure to seawater or shellfish) was identified for the three case-patients, and no cases of *V. vulnificus*-associated illness were identified among the persons who ate raw oysters with the case-patients.

As a result of these three deaths, LACDHS initiated an educational campaign to inform health-care providers and public health professionals about prevention of *V. vulnificus* infection. Brochures published in English and Spanish also were distributed to immunocompromised persons, including persons with liver disease, to warn them about the hazards of eating raw shellfish.

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Editorial Note: *V. vulnificus* is a gram-negative bacterium that causes septicemia, wound infections, and gastroenteritis. Transmission occurs through ingestion of contaminated raw or undercooked seafood, especially raw oysters, or through contamination of a wound by seawater or seafood drippings. Persons with liver disease are at particularly high risk for fatal septicemia following ingestion of contaminated seafood; immunocompromised persons also are at increased risk (*1,4,5*).

Vibrio vulnificus *Infection — Continued*

The findings in this report suggest that these three fatal cases of *V. vulnificus* infection were associated with eating contaminated raw oysters. Three factors support this conclusion: 1) *V. vulnificus* infection previously has been associated only with seawater, brackish water, or shellfish; 2) ingestion of raw oysters was the only known source of exposure for these three cases; and 3) the implicated oysters were harvested in waters in which *V. vulnificus* is commonly present during warm months.

Although there is no national surveillance system for *V. vulnificus* infections, the Gulf Coast states, in collaboration with CDC, conduct regional *Vibrio* surveillance; Alabama, Florida, Louisiana, and Texas have participated since 1988 and Mississippi, since 1989. From 1988 through 1995, CDC received reports of 302 *V. vulnificus* infections from the Gulf Coast states; of these, 141 (47%) were associated with eating contaminated seafood, 128 (42%) with wound infections, and 33 (11%) with unknown sources. Of the 141 persons with *V. vulnificus* infections associated with ingestion, 136 (96%) had eaten raw oysters. Among the 242 persons for whom outcome was known, 86 (36%) died (CDC, unpublished data, 1996).

V. vulnificus thrives in warm sea water (*3*). The organism is frequently isolated from shellfish from the Gulf of Mexico (*3*) and from shellfish harvested from U.S. Pacific (*6*) and Atlantic (*7*) coastal waters. Although oysters can be harvested legally only from waters devoid of fecal contamination, even legally harvested oysters can be contaminated with *V. vulnificus* because the bacterium is naturally present in marine environments. *V. vulnificus* contamination does not alter the appearance, taste, or odor of oysters. Regulations in California and other states requiring oyster lot tagging, labeling, and record retention have facilitated traceback investigations. From 1990 through 1995, the Food and Drug Administration (FDA) and state officials traced oysters eaten by 26 patients who acquired *V. vulnificus* infections in states outside the Gulf Coast region; among oysters that could be traced to the harvest site (19 cases), all had been harvested in the Gulf of Mexico (FDA, unpublished data, 1996). Timely, voluntary reporting of *V. vulnificus* infections to CDC and regional FDA shellfish specialists enhances ongoing collaborative efforts to improve investigation and control of these infections. Regional FDA specialists with expert knowledge about shellfish assist state officials with tracebacks of shellfish and, when notified rapidly about cases, are often able to identify and sample harvest waters.

In California, Florida, and Louisiana, warning notices are required to be posted at sites of raw oyster sales. However, these states do not require notices in languages other than English; this policy may decrease the effectiveness of warning notices in areas such as Los Angeles where use of languages other than English is common. For example, the three persons described in this report were fluent in Spanish and spoke English as a second language. Information about consumption of raw oysters is available 24 hours a day in English and Spanish from FDA's Seafood Hotline, telephone (800) 332-4010 or (202) 205-4314.

Because of the high case-fatality rate of *V. vulnificus* infections in persons with preexisting liver disease or immunocompromising conditions, these persons especially should be informed about the health hazards associated with consumption of raw or undercooked seafood, particularly oysters (*2,8,9*); the need to avoid contact with sea water during the warm months; and the importance of using protective clothing (e.g., gloves) when handling shellfish (*8*). Health-care providers should consider *V. vulnificus* infection in the differential diagnosis of fever of unknown etiology. In

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addition, providers should ask about a history of raw oyster ingestion or sea water contact when persons with preexisting liver disease or immunocompromising conditions present with fever (especially when bullae, cellulitis, or wound infection is also present) and should promptly administer appropriate antibiotic therapy (tetracycline or a third-generation cephalosporin [e.g., ceftazidime or cefotaxime]) when indicated.

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Skid-Steer Loader-Related Fatalities in the Workplace — United States, 1992–1995

The skid-steer loader is a specialized type of wheel loader that is small, compact, and versatile and is readily adaptable to a variety of work settings (Figure 1); it is commonly used in agriculture, construction, and general industry. Recent injury surveillance findings of and investigations by the state component of CDC's National Institute for Occupational Safety and Health (NIOSH) Fatality Assessment and Control Evaluation (FACE) program* underscore the potential for preventing incidents in which workers are pinned between the bucket and frame or the lift arms and frame of skid-steer loaders. This report describes the results of FACE program investigations of four skid-steer loader-related fatalities, summarizes surveillance data for 1980–1995, and provides recommendations for the prevention of such incidents.

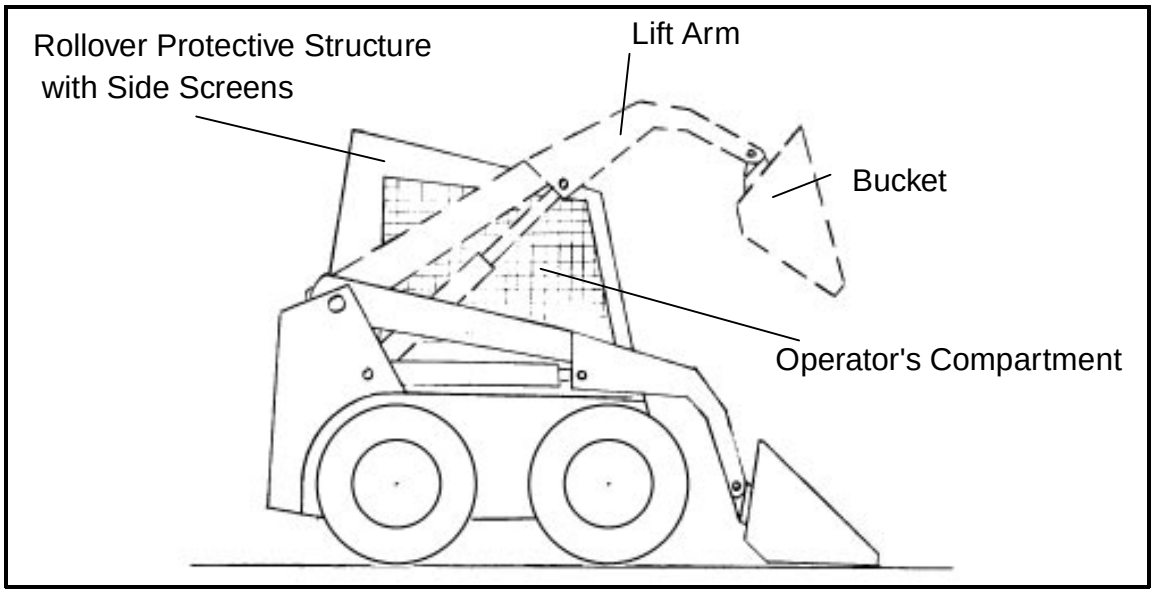
Case Reports

Incident 1. On October 16, 1993, a 26-year-old hog farmer in Minnesota was using a skid-steer loader to pile manure inside a hog containment building. The protective cage enclosing the operator's compartment had been removed to allow operating clearance inside the building. The machine stalled while the bucket was raised, and the farmer attempted to dismount by climbing over the left side of the loader. While

*Through cooperative agreements with NIOSH, 14 states maintain multiple-source surveillance networks for identification of all traumatic occupational fatalities; conduct site investigations of selected categories of cases (including fatal falls from elevations and machinery-related incidents); and disseminate injury-prevention information.

Skid-Steer Loader-Related Fatalities — Continued

FIGURE 1. Typical configurations of a skid-steer loader, shown with lift arms and bucket in lowered position (solid lines) and in raised position (dashed lines)



dismounting, he inadvertently struck the lift control lever; as a result, the lift arms lowered on him. He died from respiratory arrest caused by crush injury to the chest wall.

Incident 2. On March 1, 1994, a 26-year-old sawmill operator in Wyoming was transporting stockpiled logs to a bin area of the mill. He was using a reconditioned skid-steer loader on which the safety belt and protective screens on the sides of the cab had been removed. While operating the machine, he leaned out of the cab and was pinned between the moving lift arms and the side of the cab. The cause of death was listed as massive crush injuries to the head.

Incident 3. On February 7, 1995, a 37-year-old farmer in Iowa was cleaning the foot-pedal control linkage of a skid-steer loader while the bucket was raised. The loader's safety-belt interlock control system[†] had been bypassed by jamming a glove in the linkage. Because the loader controls had frozen in the lift position, the bucket rose when the farmer started the engine. The farmer shut down the engine and dismounted; however, because there was insufficient clearance to completely raise the bucket, the manufacturer-provided lift-arm support device[§] was not set in place. While the farmer was beneath the bucket cleaning the pedals, he inadvertently activated the foot-operated lift control and caused the bucket to descend. He sustained fatal crush injuries to the chest.

[†]An interlock is a device or mechanism used to connect individual components so that the action of one part of the equipment is constrained by, or dependent on, another (*1*); in general, its purpose is to prevent the operation of machine components under specified conditions, usually when a hazard is present. As applied to skid-steer loaders, the interlock prevents movement of the lift-arm controls unless safety belts or safety bars are correctly engaged.

[§]A lift-arm support device is a mechanical device used to prevent inadvertent lowering of the lift arms when the bucket is required to be in the elevated position for maintenance, service, or similar purpose other than loader operation (*2*).

Skid-Steer Loader-Related Fatalities — Continued

Incident 4. On May 25, 1995, a 30-year-old carpenter in Nebraska was preparing to use a skid-steer loader to back-fill dirt around a newly constructed house. While standing in front of the machine under the raised bucket, he activated the foot-operated lift control and the bucket dropped on him. He died from internal injuries. FACE investigators determined that the safety-belt interlock had been deactivated.

Surveillance for Skid-Steer Loader-Related Fatalities

During 1992–1995, FACE received 22 reports of skid-steer loader-related fatalities from eight states (Wisconsin [six], Iowa [four], Minnesota [four], Nebraska [three], Colorado [two], California [one], Massachusetts [one], and Wyoming [one]). All the decedents were males; ages ranged from 21 to 68 years (mean: 40 years). The decedents were employed in agriculture (13), construction (four), services (two), retail trade (one), manufacturing (one), and wholesale trade (one); their occupations were classified as farmer (10), laborer (four), business owner (three), machine operator (two), landscaper (two), and carpenter (one).

In 10 of the 22 cases, the decedent had been working or standing under a raised bucket. Five incidents occurred because the decedent had leaned out of the operator's compartment into the path of ascending or descending lift arms and was crushed against the frame by the lift arm. In the other incidents, the decedents were crushed between the bucket and machine frame while dismounting or mounting (four) or were caught between the bucket and frame (three).

Additional cases were identified through two other surveillance systems for work-related fatal injuries: the NIOSH National Traumatic Occupational Fatalities (NTOF) surveillance system[¶] and the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI).** During 1980–1992, NTOF identified 25 work-related fatalities that resulted when the worker was pinned between the bucket and frame or the lift arms and frame of a skid-steer loader; 15 (60%) occurred during 1988–1992. NTOF data include 65 additional case narratives describing similar injuries but do not specify the loader type; some of these deaths may have been skid-steer loader related. CFOI identified 20 such incidents during 1992–1994. Overlap in the identification of cases was limited: one fatality in 1992 was recorded by NTOF and by FACE, and two fatalities (one each in 1992 and 1993) were reported in both FACE and CFOI. Incidence rates were not calculated because denominator data for exposure to skid-steer loaders were not available.

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Editorial Note: Skid-steer loaders are particularly adaptable to use in agriculture and construction because their small size and method of steering[††] permit exceptional maneuverability. The machine is compact, in part because the operator's seat and controls are placed in front of the engine between the loader lift arms and in front of the

[¶]Based on death certificates obtained from the 50 states, the District of Columbia, and New York City, NTOF contains data for persons aged ≥16 years for whom there was a work-related external cause of death. Data are available for 1980–1992.

**CFOI is a multiple-source reporting system for occupational fatalities implemented nationwide by BLS in 1992.

[††]Vehicles steer by varying the speed and/or direction of the wheel rotation on opposite sides of the machine (i.e., skidding).

Skid-Steer Loader-Related Fatalities — Continued

lift-arm pivot points, which requires the operator to mount and dismount the machine from the front by climbing over the bucket. Skid-steer loaders incorporate hand-lever controls or foot-pedal controls for the lift arms and bucket tilt functions; the operator can inadvertently activate these controls by failing to follow proper safety procedures during mounting and dismounting.

Specifications of currently manufactured skid-steer loaders conform to recommendations issued in June 1985 by the Society of Automotive Engineers (*2*). To protect against inadvertent activation, manufacturers have equipped the loaders with skid-resistant steps, grab handles, and specific warning and instructional signs. In the early 1980s, manufacturers introduced interlock control systems that require the safety belt and/or safety bar to be engaged before the loader's controls can be activated. However, these interlock control systems can be bypassed by operators and rendered inoperative. Rollover protective structures (ROPSs) with side screens and use of safety belts provide additional protection by preventing the operator from leaning into the path of moving lift arms. Finally, an approved lift-arm support device can prevent serious injury from inadvertent lowering of the lift arms when the lift arms are raised for service procedures. The risk for inadvertent lowering is increased if the loader's interlock control systems are bypassed or inoperative.

Because of the variety of industries and circumstances in which skid-steer loaders are used (estimates of the number of these machines in use during 1991 ranged from 140,000 to 178,000 [*3*]) and the limitations inherent in current surveillance for fatal occupational injuries, the data in this report probably underestimate the number of fatal injuries associated with skid-steer loaders. The state component of FACE receives reports of work-related fatalities from only 14 states. In addition, death certificate-based systems like NTOF identify approximately 80% of work-related fatalities (*4,5*). Finally, because of the limited nature of injury descriptions in NTOF and CFOI when compared with FACE, these systems are less likely to specify the exact type of loader associated with a fatality, constraining ascertainment of specific circumstances. Despite these underestimates, the cases in this report suggest a recurrent pattern of preventable injuries.

To protect against lift arm- or bucket-related injuries while using skid-steer loaders, NIOSH and equipment manufacturers recommend the following precautions:

- Operators should follow the manufacturer's warnings and instructions for safe mounting and dismounting. In particular, they should mount the loader only when the lift arms and bucket are flat on the ground; before leaving the loader seat, they should 1) lower the lift arms and bucket flat on the ground; 2) turn the engine off; and 3) engage the parking brake.
- Operators should use the loader's controls only from the operator's position.
- Operators should not use controls as grab handles.
- Owners and operators should inspect and maintain skid-steer loaders in accordance with manufacturers' instructions. Control interlocks, safety belts, safety bars, ROPSs, and side screens always should be properly inspected and maintained and never should be modified or bypassed.
- Service personnel should not perform maintenance or service under a raised lift arm or bucket unless an approved lift-arm support is used. When lift-arm supports

Skid-Steer Loader-Related Fatalities — Continued

cannot be engaged directly from the operator's seat, they should be engaged by a second person who can stay clear of the raised lift arms and bucket while doing so.

- Operators and service personnel should read and understand the manufacturer's operating and service procedures specified in the operator's manuals and on the machine's safety signs. Manuals and other operator training materials (e.g., instructional videos and/or operator training courses) can be obtained from the equipment dealer or manufacturer.

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Adult Blood Lead Epidemiology and Surveillance — United States, First Quarter 1996, and Annual 1995

CDC's National Institute for Occupational Safety and Health Adult Blood Lead Epidemiology and Surveillance program (ABLES) monitors laboratory-reported elevated blood lead levels (BLLs) among adults in the United States (*1*). Twenty-three states reported surveillance results to the ABLES program in 1995. Ohio and Minnesota joined ABLES in 1996; their data are included for the first quarter of 1996. This report presents ABLES data for the first quarter of 1996 compared with the first quarter of 1995 and annual data for 1995 compared with 1994.

First Quarter Reports, 1996

During January 1–March 31, 1996, the number of reports of BLLs ≥25 μg/dL decreased by 8% compared with the number reported for the same period in 1995 (*2*), which has been revised to include previously unpublished 1995 data for Minnesota and Ohio (Table 1). The number of reports for 1996 decreased in all reporting categories. This overall trend of decreasing reports is consistent with the fourth quarter report for 1995 (*3*).

Annual Reports, 1995

Overall reports of BLLs ≥25 μg/dL decreased from 26,832 in 1994 to 26,459 in 1995 (Table 2); this represents a 1% decrease, with the same 23 states reporting in each year. In comparison, the number of reports increased by 4% from 1993 to 1994; however, three additional states had initiated reporting in 1994 (*2*). Although total reports decreased in 1995, the number of reported persons with BLLs ≥25 μg/dL increased

Adult Blood Lead Epidemiology — Continued

TABLE 1. Number of reports of elevated blood lead levels (BLLs) among adults, number of adults with elevated BLLs, and percentage change in number of reports — 25 states,* first quarter, 1996

Reported BLL (μg/dL)	First quarter, 1996		No. reports, first quarter, 1995§	% Change from first quarter, 1995 to 1996
	No. reports	No. persons†		
25–39	4954	3612	5236	– 5%
40–49	1152	819	1313	–12%
50–59	207	154	282	–27%
≥60	102	54	108	– 6%
Total	**6415**	**4639**	**6939**	**– 8%**

* Reported by Alabama, Arizona, California, Connecticut, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Washington, and Wisconsin.
† Individual reports for persons are categorized according to the highest reported BLL for the person during the given quarter. Pennsylvania provides the number of reports but no information on persons. The data about persons for Pennsylvania included in this table are estimates based on the proportions from the other 24 states combined and the number of reports received from Pennsylvania. Data for Alabama and Arizona were missing; first quarter 1995 data were used as an estimate.
§ Unpublished data for Ohio and Minnesota are included for the first time in addition to previously published 1995 totals (*2*).

TABLE 2. Number of reports of elevated blood lead levels (BLLs) among adults, number of adults with elevated BLLs, and new cases* of elevated BLLs — United States,† 1994 and 1995

Highest BLL (μg/dL)	1995				1994			
	No. reports§	No. persons¶	New cases**		No. reports	No. persons	New cases††	
			No.	(%)			No.	(%)
25–39	19,979	9,586	3,780	(39)	19,420	8,651	4,254	(49)
40–49	5,125	2,399	894	(37)	5,821	2,562	887	(35)
50–59	911	447	176	(39)	1,132	644	269	(42)
≥60§	444	232	143	(62)	459	280	209	(75)
Total	**26,459**	**12,664**	**4,993**	**(39)**	**26,832**	**12,137**	**5,619**	**(46)**

* A new case is defined as at least one report of a BLL ≥25 μg/dL in an adult that appears in state surveillance data during the current year and was not recorded in the immediately preceding year. Based on this definition, in the year a state begins surveillance, all persons are new cases; as surveillance continues into subsequent years, repeating persons are no longer counted as new cases. Thus, a decrease in the proportion of new cases may be explained in part by removal of reports from the "new case" category as a state enters its second year of reporting.
† Alabama, Arizona, California, Connecticut, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Washington, and Wisconsin.
§ Data for Alabama and Vermont were missing for 1995; 1994 data were used as an estimate.
¶ Individual reports are categorized according to the highest reported BLL for the person during the given year. Pennsylvania and Michigan provided number of reports but not persons; the number of persons are estimates based on the proportions from the other 21 states combined and the number of reports received from the two states. Data for Alabama and Vermont were missing for 1995; 1994 data were used as an estimate.
** New cases for 1995 were not reported for Illinois, Michigan, Pennsylvania, and South Carolina. New cases for those four states are estimates based on proportions from the other 19 states combined and the number of reports, persons, or unassigned new cases reported from the four states. Data for Alabama, New Hampshire, and Vermont were missing for 1995; 1994 data were used as an estimate.
†† New cases for 1994 were not reported from Illinois, Michigan, Pennsylvania, and South Carolina. Estimates were included in the 1994 data.

Adult Blood Lead Epidemiology — Continued

from 12,137 in 1994 to 12,664 in 1995* (Table 2), representing a 4% increase (with a constant 23 states reporting). Similarly, from 1993 to 1994, the number of persons with BLLs ≥25 μg/dL increased 8%, with three new states starting to report in 1994 (*2*). Finally, the proportion of reported persons with new cases† decreased by 11% from 1994 to 1995 (Table 2); this followed a 15% decrease from 1993 to 1994 (*2*). Of the 12,664 persons reported in 1995, 4993 (39%) had new cases (Table 2); in comparison, of the 12,137 persons reported in 1994, 5619 (46%) had new cases, and of the 11,240 reported in 1993, 6584 (59%) had new cases (*2*).

The proportion of BLLs reported to ABLES at ≥50 μg/dL (the level designated by the Occupational Safety and Health Administration for medical removal from the workplace) was 8% in 1993, 6% in 1994 (*2*), and 5% in 1995. The proportion of persons with BLLs at the ≥50 μg/dL level was 8% in 1993, 8% in 1994 (*2*), and 5% in 1995. The proportion of new cases reported to ABLES at the ≥50 μg/dL level was 9% in 1993, 9% in 1994 (*2*), and 6% in 1995.

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Editorial Note: During 1993–1995, the decreases in the number of reports of BLLs ≥25 μg/dL and the proportions of new cases may reflect improved efforts of the various participating states, and lead-using industries within them, to identify lead-exposed workers and prevent new lead exposures. However, the number of persons with BLLs ≥25 μg/dL increased, and 61% of the persons reported with BLLs ≥25 μg/dL in 1995 also had been reported in 1994. Reasons for repeat reports of elevated BLLs include 1) recurring exposure resulting from inadequate control measures and worker-protection practices, which may indicate a need for strengthened prevention

*Persons often have multiple elevated BLLs reported in a given year. Individual reports for persons are categorized according to the highest reported BLL for the person during the given quarter.

†A new case is defined as at least one report of a BLL ≥25 μg/dL in an adult that appears in state surveillance data during the current year and was not recorded in the immediately preceding year. Based on this definition, in the year a state begins surveillance, all persons are new cases; as surveillance continues into subsequent years, repeating persons are no longer counted as new cases. Thus, a decrease in the proportion of new cases may be explained in part by removal of reports from the "new case" category as a state enters its second year of reporting.

Adult Blood Lead Epidemiology — Continued

measures; 2) routine retesting of employee BLLs that, although elevated, remain below levels requiring medical removal; and 3) increased employer monitoring during medical removal. All the trends in BLLs ≥50 μg/dL seem to be consistent with improved worker protection.

Trends in these surveillance data must be interpreted in relation to variations in annual reporting totals, which reflect 1) changes in the number of participating states; 2) changes in staffing and funding in state-based surveillance programs; and 3) interstate differences in worker BLL testing by lead-using industries. In addition, estimates from the Third National Health and Nutrition Examination Survey of the number of adults exposed to lead (*4*) indicate that ABLES data may be underreported.

The findings in this report document the continuing occurrence of work-related lead exposures as an occupational health problem in the United States. A goal of the ABLES program is to enhance surveillance for this preventable condition by expanding the number of participating states, reducing variability in reporting, and distinguishing between new and recurring elevated BLLs in adults.

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Prevention and Management of Heat-Related Illness Among Spectators and Staff During the Olympic Games — Atlanta, July 6–23, 1996

To help ensure the health and safety of athletes, staff, and spectators at the 1996 Summer Olympic Games in Atlanta during July 19–August 5, the Atlanta Committee for the Olympic Games (ACOG) Medical Services; CDC; the Division of Public Health, Georgia Department of Human Resources (GDPH); and other local, state, and federal public health agencies designed and implemented two public health surveillance systems. This report summarizes provisional data from the ACOG health information system about spectators and staff treated by physicians at venue medical-assistance sites from July 6 (when the Olympic Village opened) through July 23; based on these data, heat-related illnesses have been the most commonly reported preventable health problem. This report also presents heat-related data from the GDPH medical-encounter surveillance system designed to monitor health events outside the Olympic venues.

ACOG Health Information System

The ACOG system monitors the approximately 100 medical-assistance sites at the venues (*1*). In Atlanta, the daily temperatures during July 6–23 ranged from 66 F to 95 F (19 C–35 C); in addition, an estimated 2.2 million persons are attending the

Heat-Related Illness — Continued

games. During July 6–23, a total of 2912 spectators and staff were treated by physicians at medical-assistance sites. Of these, 372 (12.8%) persons were treated for heat-related conditions, including heat cramps/dehydration, heat syncope, and heatstroke; 10 persons were transported to hospitals for treatment.

Heat-related illnesses have been reported both from competition and noncompetition venues. Most (193 [51.9%]) of the 372 persons with heat-related illness were treated from noon to 4 p.m. However, 54 (50.5%) of 107 medical encounters treated by physicians at one evening event attended by an estimated 135,000 persons were heat-related.

GDPH Sentinel Hospital System

GDPH initiated sentinel medical-encounter surveillance for selected conditions of public health importance, including heat-related encounters, from eight hospital emergency departments (EDs); four hospitals are located in the Atlanta metropolitan area, and four are located in other venue areas.

During July 7–23, a total of 156 persons presented to GDPH sentinel hospital EDs with heat-related conditions, accounting for approximately 2% of ED visits for the selected conditions under surveillance; 15 persons required hospital admission. The proportion of heat-related encounters increased steadily, peaking at 4.2% of visits in both Atlanta and other areas on July 20, the first full day of the Olympic Games. Eighty percent of visits were for persons aged 10–64 years, and 14% were for persons aged ≥65 years. Approximately 14% of heat-related encounters in metropolitan Atlanta and 6% of such encounters in other venues occurred among persons who reside outside Georgia.

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Editorial Note: The findings in this report from the ACOG health information system document only heat-related illnesses among spectators and staff treated by physicians inside the Olympic venues. In addition, GDPH data document heat-related illnesses among persons seeking care at hospital EDs. This report does not include information about persons treated by paramedical personnel only.

Based on anticipated high temperatures and humidity, continued crowding, and the provisional data in this report, GDPH, CDC, and other agencies recommend that spectators and staff at the Olympic events and at other summertime sporting events take precautions to prevent heat-related illness (*2*). These precautions include wearing loose-fitting, light-colored clothing; wearing a protective hat; increasing intake of nonalcoholic beverages; maximizing time spent in an air-conditioned environment; and spending time in shaded areas both inside and outside the venues. Spectators, staff, and others should take these precautions whenever they expect to spend time outside (e.g., en route to or from events), regardless of whether the event itself is indoors or outdoors. Employers and supervisors should consider these precautions when devising work schedules and rest periods for paid and volunteer staff.

Heat-Related Illness — Continued

GDPH implemented a comprehensive approach to prevent heat-related morbidity statewide during the Olympics, including modifying environmental health regulations to require the availability of free water at events with >50 attendees and undertaking an aggressive media and public information campaign. In addition, local government agencies and volunteer organizations cooperated to establish facilities to provide water, protective hats, and sunscreen. For example, on July 22, an estimated 11,000 cups of water, 5400 hats, and 13,000 sunscreen packages were distributed in downtown Atlanta (P. Meehan, GDPH, personal communication, 1996). In addition, ACOG and public health officials have used the medical surveillance data to redeploy free drinking water provided by GDPH to areas with large numbers of heat-related illnesses. ACOG also has used these data to evaluate and plan medical services.

Adverse health outcomes associated with high environmental temperatures include heat cramps, heat syncope, heat exhaustion, and heatstroke (*3*). Heatstroke (i.e., core body temperature ≥105 F [≥40.4 C]), the most serious of these conditions, is characterized by rapid progression of lethargy, confusion, and unconsciousness; it can be fatal despite medical care directed at lowering body temperature. Heat exhaustion is a milder syndrome that occurs after sustained exposure to hot temperatures and results from dehydration and electrolyte imbalance; manifestations include headache, nausea, vomiting, dizziness, weakness, or fatigue, and treatment is supportive. Heat syncope and heat cramps usually are related to physical exertion during hot weather; persons with loss of consciousness resulting from heat syncope should be treated by placement in a recumbent position and replacement of fluids and electrolytes. During sporting events, such as the Olympics, spectators and staff should obtain medical assistance if, after self-treatment, heat-related symptoms persist or if fainting occurs.

The 1996 Olympics is a mass gathering that has posed complex challenges for ensuring the public health and medical safety needs of its participants. During the 17 days of the Olympics, an estimated 2.2 million persons from geographically diverse areas will be gathered in a confined area under subtropical environmental conditions. To address the health and safety needs, ACOG and local, state, and federal public health agencies collaborated closely to develop a public health surveillance system, unprecedented in timeliness and scope, that also can serve as a model for future scheduled special events.

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Update: Mercury Poisoning Associated with Beauty Cream — Arizona, California, New Mexico, and Texas, 1996

During September 1995–May 1996, the Texas Department of Health (TDH), the New Mexico Department of Health (NMDH), and the San Diego County (California) Health Department investigated three cases of mercury poisoning associated with the use of

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a mercury-containing beauty cream produced in Mexico (*1*). The ongoing investigation has found this product in shops and flea markets in the United States located near the U.S.-Mexico border, and a U.S. distributor has been identified in Los Angeles. The cream, marketed as "Crema de Belleza—Manning" for skin cleansing and prevention of acne, listed "calomel" (mercurous chloride [Hg_2Cl_2]) as an ingredient and contained 6% to 10% mercury by weight (*1*). This report presents findings of a continuing investigation by these health departments, the Arizona Dept of Health Services (ADHS), California State Department of Health Services (CSDHS), the Food and Drug Administration (FDA), and CDC.

In response to media announcements in Arizona, California, New Mexico, and Texas, 238 persons (89 in Arizona, 65 in California, 36 in New Mexico, and 48 in Texas) contacted their health departments to report use of the cream. Of the 119 persons for whom urinalysis has been completed, 104 (87%) had elevated mercury levels (defined as a level >20 μg/L) (27 [87%] of 31 in Arizona, 35 [83%] of 42 in California, 28 [88%] of 32 in New Mexico, and 14 [100%] of 14 in Texas); 27 (26%) of the 104 had levels >200 μg/L. Elevated mercury levels ranged from 22.0 μg/dL to 1170.3 μg/L. Elevated urine mercury levels also have been detected in some persons who did not use the cream but who were close household contacts of cream users. For example, in one sibling of a cream user, the urine mercury level was 27.7 μg/L even though he had never used the product. Similarly, in a woman who had not used the cream herself but whose daughter had used the cream for 1½ years, the urine mercury level was 31.6 μg/L, and in a son of a cream user, the urine mercury level was 50 μg/L. Persons with elevated urine mercury levels have been advised by health departments to consult their physicians.

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Editorial Note: The product associated with the cases described in this report lists calomel as an ingredient but does not state its concentration. Because mercury compounds are readily absorbed through intact skin, FDA regulations restrict the use of these compounds as cosmetic ingredients: specifically, mercury compounds can be used only as preservatives in eye-area cosmetics at concentrations not exceeding 65 ppm (0.0065%) of mercury; no effective and safe nonmercurial substitute preservative is available for use in such cosmetics.*

The early clinical manifestations of mercury toxicity can be nonspecific and may be misdiagnosed in users of this or other products that contain calomel; mercury toxicity should be considered in cases of neurologic symptoms of unclear etiology. Chronic exposure to mercury salts can result in a variety of manifestations of central nervous system toxicity, including personality changes; nervousness; irritability; tremors; weakness; fatigue; loss of memory; peripheral neuropathy; mental illness, including

*21 CFR 700.13.

Mercury Poisoning — Continued

psychosis; and changes in or loss of hearing, vision, or taste (*2*). Other classic signs of toxicity associated with exposure to mercury salts include gingivitis, stomatitis, and excessive salivation. In children, mercury toxicity may result in the rare syndrome of acrodynia, which is characterized by severe leg cramps, irritability, paresthesia, excessive perspiration, pruritus, and painful redness and peeling of the palms of the hands and soles of the feet.

The ADHS, CSDHS, NMDH, and TDH have issued public warnings about and advised discontinuing use of "Crema de Belleza—Manning." Persons concerned about mercury exposure should consult their physicians. Health-care providers should consider mercury poisoning when assessing illness in persons who have used the cream and should report cases of exposure to the state or county health department. Physicians who have questions about the medical management of patients exposed to mercury should contact their local poison-control center. Health departments in each of the four border states can be contacted for specific recommendations regarding the appropriate disposal of the product.

Although the potential health risks associated with using "Crema de Belleza—Manning" were only recognized in 1996, the cream has been produced since 1971. The prevalence of current use of this cream cannot be accurately estimated; however, the ongoing investigation in New Mexico suggests that it is commonly used among women of childbearing age. In a follow-up survey to assess use of this product, approximately 2% of women at three Special Supplemental Nutrition Program for Women, Infants, and Children clinics in the southern part of New Mexico reported using the cream. In New Mexico, another skin-care product, "Nutrapiel Cremaning Plus", made in Tampico, Mexico, recently has been found to contain 9.7% mercury by weight; other mercury-containing skin-care products may be identified as a result of this investigation. Health-education messages should emphasize the health risks of using any product containing calomel.

FDA has issued a statement about the health risk associated with use of "Crema de Belleza—Manning (*3*)."

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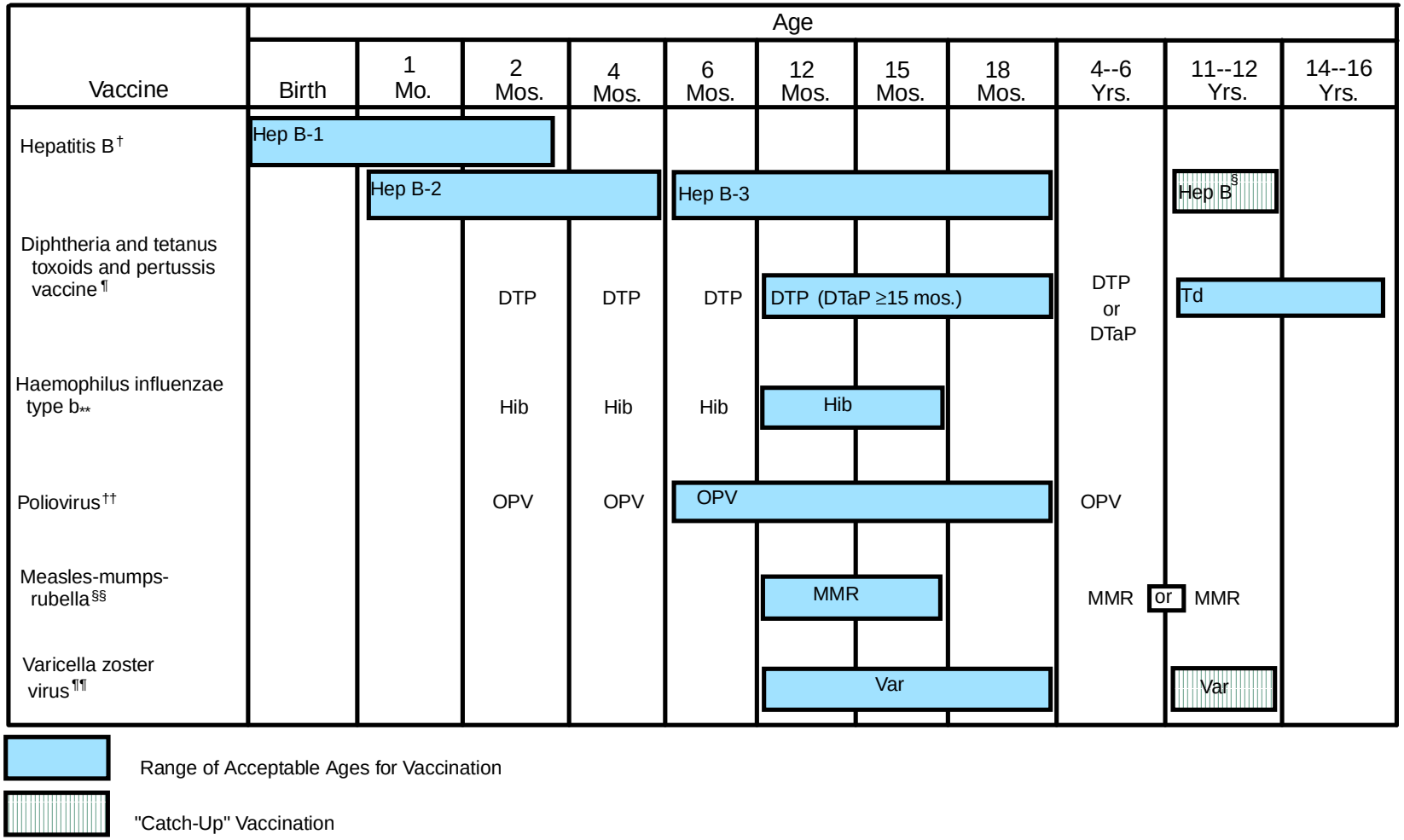
Notice to Readers

Recommended Childhood Immunization Schedule — United States, July–December 1996

The recommended childhood immunization schedule (Figure 1) was developed as a collaborative effort between the Advisory Committee on Immunization Practices

FIGURE 1. Recommended childhood immunization schedule* — United States, July–December 1996



* Vaccines are listed under the routinely recommended ages.
† **Infants born to hepatitis B surface antigen (HBsAg)-negative mothers** should receive 2.5 μg of Recombivax HB® (Merck & Co.) or 10 μg of Engerix-B® (SmithKline Beecham). The second dose should be administered 1 month after the first dose. **Infants born to HBsAg-positive mothers** should receive 0.5 mL hepatitis B immune globulin (HBIG) within 12 hours of birth, and either 5 μg of Recombivax HB® or 10 μg of Engerix-B® at a separate site. The second dose is recommended at age 1–2 months and the third dose at age 6 months. **Infants born to mothers whose HBsAg status is unknown** should receive either 5 μg of Recombivax HB® or 10 μg of Engerix-B® within 12 hours of birth. The second dose of vaccine is recommended at age 1 month and the third dose at age 6 months.
§ Adolescents who have not received three doses of hepatitis B vaccine should initiate or complete the series at age 11–12 years. The second dose should be administered at least 1 month after the first dose, and the third dose should be administered at least 4 months after the first dose and at least 2 months after the second dose.
¶ The fourth dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP) may be administered at age 12 months, if at least 6 months have elapsed since the third dose of DTP. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP) is licensed for the fourth and/or fifth vaccine dose(s) for children aged ≥15 months and may be preferred for these doses in this age group. Tetanus and diphtheria toxoids, adsorbed, for adult use (Td) is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of DTP, DTaP, or diphtheria and tetanus toxoids, absorbed, for pediatric use (DT).
** Three *Haemophilus influenzae* type b (Hib) conjugate vaccines are licensed for infant use. If PedvaxHIB® (Merck & Co.) *Haemophilus* b conjugate vaccine (Meningococcal Protein Conjugate) (PRP-OMP) is administered at ages 2 and 4 months, a dose at 6 months is not required. After completing the primary series, any Hib conjugate vaccine may be used as a booster.
†† Oral poliovirus vaccine (OPV) is recommended for routine infant vaccination. Inactivated poliovirus vaccine (IPV) is recommended for persons—or household contacts of persons—with a congenital or acquired immune deficiency disease or an altered immune status resulting from disease or immunosuppressive therapy, and is an acceptable alternative for other persons. The primary three-dose series for IPV should be given with a minimum interval of 4 weeks between the first and second doses and 6 months between the second and third doses.
§§ The second dose of measles-mumps-rubella vaccine (MMR) is routinely recommended at age 4–6 years or at age 11–12 years but may be administered at any visit provided at least 1 month has elapsed since receipt of the first dose.
¶¶ Varicella zoster virus vaccine (Var) can be administered to susceptible children any time after age 12 months. Unvaccinated children who lack a reliable history of chickenpox should be vaccinated at age 11–12 years.

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.

Source: Advisory Committee on Immunization Practices, American Academy of Pediatrics, and American Academy of Family Physicians.

Notices to Readers — Continued

(ACIP), the American Academy of Pediatrics, the American Academy of Family Physicians, and the Food and Drug Administration (FDA). In January 1996, the schedule was updated to include recommendations for varicella zoster virus vaccine (Var) and for adolescent hepatitis B vaccination (*1*). Since publication in January 1996, FDA has not licensed new vaccines recommended for routine administration to children, and no changes have been made in ACIP recommendations. Therefore, the recommended childhood immunization schedule remains unchanged as of July 1996 (Figure 1).

For detailed information about the use of vaccines, health-care providers should consult the vaccine-specific recommendations of the ACIP, the *1994 Red Book* (*2*), the manufacturers' package inserts, or the *Physicians' Desk Reference* (*3*).

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Notice to Readers

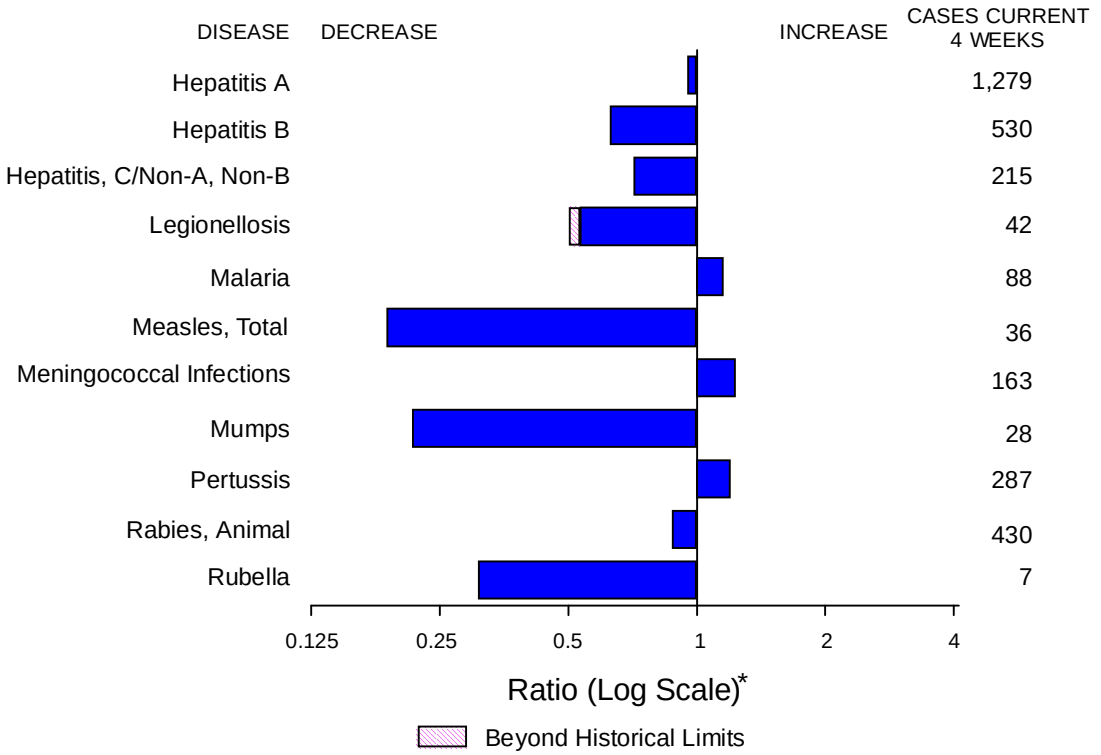
Applications Available for Public Health Leadership Institute

The CDC/University of California Public Health Leadership Institute (PHLI) is a 1-year scholars program that includes an intensive on-site week, scheduled for March 17–21, 1997. Conducted under a cooperative agreement between CDC's Public Health Practice Program Office and the University of California at Los Angeles, the PHLI is designed to strengthen the nation's public health system by enhancing the leadership capacities of senior city, county, state, and international public health officials. The program curriculum focuses on four areas: challenges—current and future issues confronting public health; leadership and vision; communication and information; and political and social change.

The sixth year of the PHLI will begin on November 18, 1996, with an orientation for approximately 50 scholars at the American Public Health Association Annual Meeting in New York City. During the first 5 years of the PHLI, 273 public health leaders from 47 states and the District of Columbia have participated in the program.

Senior state and local health officials, including deputy directors nominated by state health directors, are eligible. The applications are available and must be submitted by August 15, 1996, and selected scholars will be notified by September 30, 1996. Additional information and applications are available from the Director, PHLI, telephone (510) 649-1599.

FIGURE I. Selected notifiable disease reports, comparison of 4-week totals ending July 20, 1996, 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 selected notifiable diseases, United States, cumulative, week ending July 20, 1996 (29th Week)

	Cum. 1996		Cum. 1996
Anthrax	-	HIV infection, pediatric*§	138
Brucellosis	47	Plague	-
Cholera	1	Poliomyelitis, paralytic¶	-
Congenital rubella syndrome	1	Psittacosis	19
Cryptosporidiosis*	911	Rabies, human	-
Diphtheria	2	Rocky Mountain spotted fever (RMSF)	251
Encephalitis: California*	1	Streptococcal toxic-shock syndrome*	10
eastern equine*	1	Syphilis, congenital**	-
St. Louis*	-	Tetanus	11
western equine*	-	Toxic-shock syndrome	76
Hansen Disease	57	Trichinosis	11
Hantavirus pulmonary syndrome*†	9	Typhoid fever	176

-: no reported cases
*Not notifiable in all states.
† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§ Updated monthly to the Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention (NCHSTP), last update June 25, 1996.
¶ Three suspected cases of polio with onset in 1996 have been reported to date.
**Updated quarterly from reports to the Division of STD Prevention, NCHSTP. First quarter 1996 is not yet available.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending July 20, 1996, and July 22, 1995 (29th Week)

Reporting Area	AIDS*		Chlamydia	*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB		Legionellosis	
				NETSS†	PHLIS§						
	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995
UNITED STATES	34,213	39,253	158,917	882	328	146,334	214,989	1,970	2,176	390	668
NEW ENGLAND	1,391	2,088	9,240	114	21	4,003	4,137	60	70	19	14
Maine	22	72	-	7	-	24	44	-	-	1	4
N.H.	42	59	397	12	5	80	69	3	11	-	1
Vt.	10	16	-	10	6	34	27	25	6	2	-
Mass.	648	922	3,647	47	10	1,207	1,486	28	51	10	8
R.I.	94	143	1,120	7	-	283	278	4	2	6	1
Conn.	575	876	4,076	31	-	2,375	2,233	-	-	N	N
MID. ATLANTIC	9,450	10,479	21,534	71	26	16,258	24,325	212	231	81	109
Upstate N.Y.	1,164	1,143	N	51	12	3,328	4,677	180	119	27	30
N.Y. City	5,299	5,627	9,512	2	-	4,931	9,873	1	1	1	2
N.J.	1,796	2,391	2,223	18	5	2,442	2,226	-	93	7	19
Pa.	1,191	1,318	9,799	N	9	5,557	7,549	31	18	46	58
E.N. CENTRAL	2,777	3,057	22,307	237	95	23,283	43,271	259	179	109	195
Ohio	622	609	11,162	63	33	8,127	14,048	14	6	50	91
Ind.	393	301	5,558	28	19	3,710	4,799	7	1	27	45
Ill.	1,202	1,281	1,018	104	16	9,303	10,764	43	52	2	20
Mich.	407	667	U	42	27	U	10,014	195	120	24	21
Wis.	153	199	4,569	N	-	2,143	3,646	-	-	6	18
W.N. CENTRAL	820	958	13,048	176	78	6,468	10,955	67	37	24	45
Minn.	157	218	-	54	38	U	1,668	-	2	2	-
Iowa	57	53	1,949	48	23	504	798	33	7	5	14
Mo.	402	421	6,997	25	-	4,538	6,234	20	11	6	13
N. Dak.	8	4	2	8	6	1	17	-	4	-	2
S. Dak.	8	9	689	7	-	95	111	-	1	2	-
Nebr.	55	71	885	10	2	159	556	3	9	7	11
Kans.	133	182	2,526	24	9	1,171	1,571	11	3	2	5
S. ATLANTIC	8,571	10,054	29,878	47	13	54,403	59,779	134	126	70	104
Del.	167	191	-	-	1	799	1,155	1	-	6	1
Md.	1,026	1,415	3,444	N	3	7,125	7,067	-	6	9	17
D.C.	591	593	N	-	-	2,474	2,465	-	-	4	4
Va.	546	830	5,953	N	2	5,205	5,937	8	7	12	8
W. Va.	64	46	-	N	2	268	470	7	26	1	3
N.C.	464	586	-	12	2	10,179	13,333	30	28	5	22
S.C.	443	453	-	6	3	6,148	6,709	15	14	4	20
Ga.	1,288	1,238	7,101	14	-	11,862	11,353	-	15	1	14
Fla.	3,982	4,702	13,380	12	-	10,343	11,290	73	30	28	15
E.S. CENTRAL	1,136	1,205	15,918	26	14	17,022	22,255	370	648	30	37
Ky.	174	157	3,687	4	2	2,262	2,536	17	21	3	8
Tenn.	444	533	6,887	11	12	5,958	7,441	301	625	14	15
Ala.	325	297	4,529	6	-	7,250	9,340	3	2	2	5
Miss.	193	218	U	5	-	1,552	2,938	49	-	11	9
W.S. CENTRAL	3,320	3,621	9,363	29	5	10,218	30,006	271	150	3	12
Ark.	145	166	-	8	2	2,199	2,872	2	3	-	5
La.	787	548	3,811	4	2	4,206	6,744	118	95	-	2
Okla.	138	155	3,119	4	-	1,985	2,953	69	28	3	3
Tex.	2,250	2,752	2,433	13	1	1,828	17,437	82	24	-	2
MOUNTAIN	984	1,266	6,470	66	26	4,122	4,884	361	266	23	79
Mont.	14	10	-	7	-	14	40	11	10	1	4
Idaho	23	26	856	18	5	58	70	87	33	-	2
Wyo.	3	8	340	-	2	16	29	108	111	3	6
Colo.	301	454	-	24	5	990	1,644	31	41	7	30
N. Mex.	56	111	-	2	-	491	573	37	34	1	4
Ariz.	287	298	3,437	N	11	2,100	1,651	41	18	7	7
Utah	104	87	823	10	-	160	128	38	10	2	10
Nev.	196	272	1,014	5	3	293	749	8	9	2	16
PACIFIC	5,764	6,525	31,159	116	50	10,557	15,377	236	469	31	73
Wash.	383	575	5,076	23	5	1,114	1,429	35	116	3	12
Oreg.	266	223	2,924	42	17	269	439	4	32	-	-
Calif.	5,013	5,520	21,889	48	23	8,720	12,796	86	311	28	56
Alaska	14	46	578	3	-	243	383	2	1	-	-
Hawaii	88	161	692	N	5	211	330	109	9	-	5
Guam	4	-	114	N	-	26	70	1	4	-	1
P.R.	1,057	1,489	N	12	U	167	334	73	120	-	-
V.I.	14	21	N	N	U	-	-	-	-	-	-
Amer. Samoa	-	-	-	N	U	-	13	-	-	-	-
C.N.M.I.	-	-	N	N	U	11	29	-	5	-	-

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

*Updated monthly to the Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention, last update June 25, 1996.
†National Electronic Telecommunications System for Surveillance.
§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending July 20, 1996, and July 22, 1995 (29th Week)

Reporting Area	Lyme Disease		Malaria		Meningococcal Disease		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal	
	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995
UNITED STATES	3,484	4,538	618	630	2,071	1,937	5,718	8,994	9,879	11,012	3,081	4,474
NEW ENGLAND	856	829	30	27	89	93	90	207	230	266	387	917
Maine	8	3	5	3	11	6	-	2	4	11	50	20
N.H.	9	16	1	1	3	16	1	1	8	9	40	101
Vt.	5	6	2	1	3	6	-	-	1	2	99	118
Mass.	75	41	11	8	34	31	40	37	109	143	57	302
R.I.	128	142	3	2	8	3	1	1	24	23	29	172
Conn.	631	621	8	12	30	31	48	166	84	78	112	204
MID. ATLANTIC	2,252	3,022	150	171	182	253	239	480	1,692	2,348	437	1,166
Upstate N.Y.	1,375	1,460	44	33	56	69	40	46	199	273	241	680
N.Y. City	171	226	68	87	27	35	71	207	935	1,376	-	-
N.J.	91	819	28	38	49	61	73	106	378	389	75	217
Pa.	615	517	10	13	50	88	55	121	180	310	121	269
E.N. CENTRAL	30	172	51	90	274	284	787	1,539	1,083	1,070	36	38
Ohio	22	13	8	5	109	82	280	483	166	157	4	4
Ind.	8	7	7	11	41	40	133	168	103	92	1	5
Ill.	-	11	8	50	71	76	267	611	603	565	6	6
Mich.	-	1	19	13	29	51	U	160	156	217	14	17
Wis.	U	140	9	11	24	35	107	117	55	39	11	6
W.N. CENTRAL	59	57	16	14	157	115	209	460	226	333	312	209
Minn.	12	-	7	3	22	18	27	26	48	80	16	11
Iowa	12	7	2	2	29	22	11	28	36	40	150	72
Mo.	14	30	5	5	66	44	150	390	89	127	14	21
N. Dak.	-	-	-	-	3	1	-	-	3	1	39	22
S. Dak.	-	-	-	1	7	5	-	-	13	13	76	55
Nebr.	-	4	-	3	13	8	6	7	13	17	3	1
Kans.	21	16	2	-	17	17	15	9	24	55	14	27
S. ATLANTIC	157	308	140	118	459	310	2,071	2,294	1,916	1,978	1,491	1,213
Del.	31	30	2	1	2	5	23	8	20	33	39	67
Md.	61	197	30	30	43	28	322	243	169	220	359	246
D.C.	1	1	7	11	7	2	94	66	78	59	7	10
Va.	12	28	19	24	35	41	242	348	149	136	315	238
W. Va.	7	13	2	1	11	7	1	8	33	49	58	62
N.C.	30	24	10	8	54	51	577	648	270	233	378	276
S.C.	3	8	8	-	43	40	235	341	203	186	48	79
Ga.	1	5	14	14	109	60	349	425	378	359	171	166
Fla.	11	2	48	29	155	76	228	207	616	703	116	69
E.S. CENTRAL	34	30	17	11	116	123	1,421	1,762	732	745	112	147
Ky.	10	6	2	1	20	34	77	102	140	161	29	12
Tenn.	12	15	8	4	14	39	535	450	222	256	39	56
Ala.	2	1	3	5	43	27	299	351	243	203	42	76
Miss.	10	8	4	1	39	23	510	859	127	125	2	3
W.S. CENTRAL	47	61	12	16	239	234	578	1,777	1,207	1,427	38	488
Ark.	14	5	-	2	28	22	105	270	107	108	12	30
La.	1	2	2	1	42	35	315	608	U	124	13	22
Okla.	3	24	-	1	23	24	84	104	35	117	13	22
Tex.	29	30	10	12	146	153	74	795	1,006	1,078	-	414
MOUNTAIN	4	4	30	37	117	143	68	140	329	343	74	78
Mont.	-	-	3	3	4	2	-	4	14	10	12	28
Idaho	1	-	-	1	17	7	2	-	5	8	-	-
Wyo.	2	2	2	-	3	5	2	-	3	1	17	19
Colo.	-	-	14	17	20	38	21	80	45	25	21	-
N. Mex.	-	1	1	4	20	26	1	5	51	50	3	3
Ariz.	-	-	4	6	33	43	37	20	134	168	16	21
Utah	1	-	4	4	11	10	2	4	34	19	2	6
Nev.	-	1	2	2	9	12	3	27	43	62	3	1
PACIFIC	45	55	172	146	438	382	255	335	2,464	2,502	194	218
Wash.	3	4	12	13	64	65	3	9	132	151	-	4
Oreg.	7	6	12	8	80	69	5	18	49	64	-	1
Calif.	34	45	142	115	287	241	246	307	2,153	2,142	186	206
Alaska	-	-	2	1	5	5	-	1	37	47	8	7
Hawaii	1	-	4	9	2	2	1	-	93	98	-	-
Guam	-	-	-	1	1	2	3	5	35	67	-	-
P.R.	-	-	-	1	4	15	81	164	63	85	29	30
V.I.	-	-	-	2	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	3	-	-
C.N.M.I.	-	-	-	1	-	-	1	1	-	23	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE III. Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 20, 1996, and July 22, 1995 (29th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (viral), by type				Measles (Rubeola)			
			A		B		Indigenous		Imported†	
	Cum. 1996*	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	1996	Cum. 1996	1996	Cum. 1996
UNITED STATES	693	686	14,487	15,229	5,046	5,515	5	279	-	21
NEW ENGLAND	17	28	171	143	94	132	-	8	-	3
Maine	-	3	12	17	2	6	-	-	-	-
N.H.	8	7	9	7	8	13	-	-	-	-
Vt.	-	2	4	4	5	2	-	1	-	-
Mass.	8	8	88	58	26	45	-	6	-	3
R.I.	1	3	7	18	6	8	-	-	-	-
Conn.	-	5	51	39	47	58	-	1	-	-
MID. ATLANTIC	107	93	875	961	738	798	1	15	-	5
Upstate N.Y.	31	23	239	215	210	204	-	-	-	-
N.Y. City	20	23	344	468	352	252	1	6	-	3
N.J.	34	11	176	140	99	210	-	-	-	-
Pa.	22	36	116	138	77	132	-	9	-	2
E.N. CENTRAL	109	128	1,229	1,870	522	619	-	6	-	3
Ohio	66	65	498	1,067	71	70	-	2	-	-
Ind.	7	17	176	88	93	118	-	-	-	-
Ill.	25	29	235	379	116	162	-	2	-	1
Mich.	6	15	229	213	210	224	-	1	-	2
Wis.	5	2	91	123	32	45	-	1	-	-
W.N. CENTRAL	29	43	1,145	1,007	235	344	-	16	-	1
Minn.	15	19	60	96	28	28	-	13	-	1
Iowa	5	1	222	56	51	28	-	-	-	-
Mo.	6	16	537	723	122	245	-	2	-	-
N. Dak.	-	-	28	15	-	4	-	-	-	-
S. Dak.	1	1	37	22	-	2	U	-	U	-
Nebr.	1	3	130	25	11	16	-	-	-	-
Kans.	1	3	131	70	23	21	-	1	-	-
S. ATLANTIC	162	139	654	619	788	735	-	3	-	3
Del.	1	-	8	8	3	6	-	1	-	-
Md.	40	50	114	108	169	145	-	2	-	-
D.C.	5	-	18	16	27	13	-	-	-	-
Va.	5	18	89	104	85	56	-	-	-	2
W. Va.	4	6	12	11	14	29	-	-	-	-
N.C.	18	21	76	66	195	176	-	-	-	-
S.C.	3	-	30	25	47	32	-	-	-	-
Ga.	69	41	49	50	8	62	-	-	-	1
Fla.	17	3	258	231	240	216	-	-	-	-
E.S. CENTRAL	17	5	856	877	418	520	-	-	-	-
Ky.	4	1	17	32	35	49	-	-	-	-
Tenn.	7	-	583	730	255	404	-	-	-	-
Ala.	5	4	111	51	30	67	-	-	-	-
Miss.	1	-	145	64	98	-	U	-	U	-
W.S. CENTRAL	30	36	2,971	1,686	677	626	2	13	-	2
Ark.	-	5	281	187	45	30	-	-	-	-
La.	3	1	89	50	63	107	-	-	-	-
Okla.	25	17	1,234	432	59	90	-	-	-	-
Tex.	2	13	1,367	1,017	510	399	2	13	-	2
MOUNTAIN	69	79	2,290	2,369	608	480	2	84	-	1
Mont.	-	-	71	58	6	16	-	-	-	-
Idaho	1	2	140	216	64	55	-	1	-	-
Wyo.	33	4	23	71	22	14	U	-	U	-
Colo.	7	9	223	283	73	72	1	6	-	1
N. Mex.	8	11	262	518	208	189	1	6	-	-
Ariz.	9	18	948	653	152	67	-	8	-	-
Utah	6	9	501	472	61	42	-	58	-	-
Nev.	5	26	122	98	22	25	-	5	-	-
PACIFIC	153	135	4,296	5,697	966	1,261	-	134	-	3
Wash.	2	7	301	407	58	98	-	45	-	-
Oreg.	21	19	548	1,452	39	78	-	4	-	-
Calif.	127	106	3,374	3,707	856	1,065	-	21	-	2
Alaska	1	-	27	27	5	8	-	63	-	-
Hawaii	2	3	46	104	8	12	-	1	-	1
Guam	-	-	2	3	-	4	U	-	U	-
P.R.	1	2	50	51	174	326	-	7	-	-
V.I.	-	-	-	6	-	12	U	-	U	-
Amer. Samoa	-	-	-	5	-	-	U	-	U	-
C.N.M.I.	10	10	1	21	5	7	U	-	U	-

N: Not notifiable U: Unavailable -: no reported cases

*Of 157 cases among children aged <5 years, serotype was reported for 34 and of those, 10 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 20, 1996, and July 22, 1995 (29th Week)

Reporting Area	Measles (Rubeola), cont'd. Total		Mumps			Pertussis			Rubella		
	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995
UNITED STATES	300	243	7	360	529	58	1,813	1,755	-	111	84
NEW ENGLAND	11	5	-	-	10	6	365	251	-	12	35
Maine	-	-	-	-	4	-	13	18	-	-	-
N.H.	-	-	-	-	1	1	21	23	-	-	1
Vt.	1	-	-	-	-	1	11	32	-	2	-
Mass.	9	2	-	-	2	4	317	168	-	8	7
R.I.	-	2	-	-	-	-	-	-	-	-	-
Conn.	1	1	-	-	3	-	3	10	-	2	27
MID. ATLANTIC	20	5	1	56	79	2	136	147	-	6	10
Upstate N.Y.	-	-	1	17	19	1	72	70	-	3	2
N.Y. City	9	-	-	13	8	1	21	27	-	1	6
N.J.	-	5	-	2	13	-	5	8	-	2	2
Pa.	11	-	-	24	39	-	38	42	-	-	-
E.N. CENTRAL	9	13	2	70	87	7	192	205	-	3	2
Ohio	2	1	-	28	26	4	89	52	-	-	-
Ind.	-	-	-	5	5	-	19	18	-	-	-
Ill.	3	1	-	18	26	1	62	35	-	1	-
Mich.	3	5	2	18	30	2	17	33	-	2	2
Wis.	1	6	-	1	-	-	5	67	-	-	-
W.N. CENTRAL	17	2	1	6	32	3	83	101	-	1	-
Minn.	14	-	1	3	2	2	54	27	-	-	-
Iowa	-	-	-	-	8	1	3	5	-	1	-
Mo.	2	1	-	1	18	-	16	34	-	-	-
N. Dak.	-	-	-	2	-	-	1	6	-	-	-
S. Dak.	-	-	U	-	-	U	2	7	U	-	-
Nebr.	-	-	-	-	4	-	3	5	-	-	-
Kans.	1	1	-	-	-	-	4	17	-	-	-
S. ATLANTIC	6	10	1	53	80	21	235	141	-	30	6
Del.	1	-	-	-	-	1	10	7	-	-	-
Md.	2	-	1	15	25	11	82	19	-	-	1
D.C.	-	-	-	-	-	-	-	3	-	1	-
Va.	2	-	-	7	15	3	26	9	-	2	-
W. Va.	-	-	-	-	-	-	2	-	-	-	-
N.C.	-	-	-	11	16	-	36	68	-	16	-
S.C.	-	-	-	5	7	6	19	14	-	1	-
Ga.	1	2	-	2	4	-	13	5	-	-	-
Fla.	-	8	-	13	13	-	47	16	-	10	5
E.S. CENTRAL	-	-	-	17	7	5	56	87	-	2	-
Ky.	-	-	-	-	-	-	26	10	-	-	-
Tenn.	-	-	-	2	-	1	16	49	-	-	-
Ala.	-	-	-	3	4	4	9	28	-	2	-
Miss.	-	-	U	12	3	U	5	-	N	N	N
W.S. CENTRAL	15	19	-	16	38	1	53	124	-	2	7
Ark.	-	2	-	-	5	-	3	21	-	-	-
La.	-	17	-	11	8	-	5	9	-	1	-
Okla.	-	-	-	-	-	-	5	17	-	-	-
Tex.	15	-	-	5	25	1	40	77	-	1	7
MOUNTAIN	85	68	-	21	24	10	189	369	-	6	4
Mont.	-	-	-	-	1	-	6	3	-	-	-
Idaho	1	-	-	-	2	5	74	82	-	2	-
Wyo.	-	-	U	-	-	U	1	1	U	-	-
Colo.	7	26	-	2	-	5	36	53	-	2	-
N. Mex.	6	31	N	N	N	-	33	57	-	-	-
Ariz.	8	10	-	1	2	-	11	135	-	1	3
Utah	58	-	-	2	11	-	7	16	-	-	1
Nev.	5	1	-	16	8	-	21	22	-	1	-
PACIFIC	137	121	2	121	172	3	504	330	-	49	20
Wash.	45	17	1	18	10	3	216	76	-	1	-
Oreg.	4	1	N	N	N	-	28	20	-	1	-
Calif.	23	101	1	85	146	-	249	201	-	44	16
Alaska	63	-	-	2	12	-	2	-	-	-	-
Hawaii	2	2	-	16	4	-	9	33	-	3	4
Guam	-	-	U	3	3	U	-	2	U	-	1
P.R.	7	3	-	1	2	-	1	1	-	-	-
V.I.	-	-	U	-	3	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	-	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 121 U.S. cities,* week ending July 20, 1996 (29th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	577	414	100	38	18	7	40
Boston, Mass.	144	102	23	11	4	4	9
Bridgeport, Conn.	51	36	8	6	1	-	4
Cambridge, Mass.	17	15	2	-	-	-	1
Fall River, Mass.	21	16	4	1	-	-	1
Hartford, Conn.	47	31	8	4	4	-	2
Lowell, Mass.	22	19	1	2	-	-	1
Lynn, Mass.	14	10	3	1	-	-	2
New Bedford, Mass.	24	20	2	2	-	-	2
New Haven, Conn.	52	34	10	5	2	1	3
Providence, R.I.	47	35	11	1	-	-	1
Somerville, Mass.	4	1	2	1	-	-	-
Springfield, Mass.	47	28	13	2	3	1	4
Waterbury, Conn.	27	21	3	-	2	1	-
Worcester, Mass.	60	46	10	2	2	-	10
MID. ATLANTIC	2,359	1,558	445	256	63	35	109
Albany, N.Y.	49	31	10	7	-	1	3
Allentown, Pa.	13	11	2	-	-	-	-
Buffalo, N.Y.	108	80	12	14	1	1	4
Camden, N.J.	42	28	5	6	1	2	3
Elizabeth, N.J.	19	13	4	2	-	-	-
Erie, Pa.§	39	31	6	2	-	-	3
Jersey City, N.J.	49	31	11	7	-	-	3
New York City, N.Y.	1,155	735	242	136	25	17	38
Newark, N.J.	62	34	10	10	3	3	3
Paterson, N.J.	17	10	2	3	2	-	-
Philadelphia, Pa.	399	257	80	45	12	5	30
Pittsburgh, Pa.§	81	59	15	4	2	1	4
Reading, Pa.	9	7	1	1	-	-	2
Rochester, N.Y.	134	94	23	8	6	3	5
Schenectady, N.Y.	18	14	1	2	1	-	-
Scranton, Pa.§	37	27	10	-	-	-	-
Syracuse, N.Y.	99	78	9	4	7	1	9
Trenton, N.J.	29	18	2	5	3	1	2
Utica, N.Y.	U	U	U	U	U	U	U
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,152	1,405	422	190	63	71	126
Akron, Ohio	54	44	8	2	-	-	-
Canton, Ohio	44	27	10	5	2	-	4
Chicago, Ill.	511	317	90	65	21	17	54
Cincinnati, Ohio	73	51	17	4	1	-	8
Cleveland, Ohio	162	97	44	10	3	8	4
Columbus, Ohio	180	112	38	16	8	6	6
Dayton, Ohio	130	89	24	13	2	2	6
Detroit, Mich.	212	130	44	22	4	12	9
Evansville, Ind.	36	25	5	4	1	1	1
Fort Wayne, Ind.	53	35	14	-	3	1	-
Gary, Ind.	16	7	2	3	2	2	1
Grand Rapids, Mich.	47	32	6	2	2	5	2
Indianapolis, Ind.	187	128	35	15	3	6	14
Madison, Wis.	53	36	12	3	2	-	6
Milwaukee, Wis.	99	65	23	7	1	3	2
Peoria, Ill.	49	37	5	2	2	3	3
Rockford, Ill.	45	31	9	3	2	-	-
South Bend, Ind.	51	37	5	5	1	3	3
Toledo, Ohio	100	72	19	4	3	2	-
Youngstown, Ohio	50	33	12	5	-	-	3
W.N. CENTRAL	799	550	126	56	38	23	35
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	29	26	1	2	-	-	-
Kansas City, Kans.	53	33	10	5	1	4	1
Kansas City, Mo.	124	71	26	6	10	5	8
Lincoln, Nebr.	37	29	3	4	1	-	2
Minneapolis, Minn.	199	142	25	15	13	4	12
Omaha, Nebr.	91	62	16	5	4	4	1
St. Louis, Mo.	117	86	13	10	4	4	3
St. Paul, Minn.	50	33	13	3	-	1	5
Wichita, Kans.	99	68	19	6	5	1	3
S. ATLANTIC	1,601	1,038	303	168	60	30	80
Atlanta, Ga.	362	220	89	39	9	5	14
Baltimore, Md.	244	163	42	25	7	6	17
Charlotte, N.C.	94	59	18	12	4	1	4
Jacksonville, Fla.	154	102	32	15	3	2	4
Miami, Fla.	118	70	22	17	8	1	-
Norfolk, Va.	72	47	6	9	8	2	6
Richmond, Va.	73	48	14	8	3	-	3
Savannah, Ga.	54	39	7	3	1	4	5
St. Petersburg, Fla.	63	50	7	6	-	-	3
Tampa, Fla.	219	158	33	19	6	3	22
Washington, D.C.	136	74	30	15	11	6	2
Wilmington, Del.	12	8	3	-	-	-	-
E.S. CENTRAL	448	290	97	45	7	9	20
Birmingham, Ala.	U	U	U	U	U	U	U
Chattanooga, Tenn.	70	47	11	6	1	5	3
Knoxville, Tenn.	82	54	20	8	-	-	5
Lexington, Ky.	64	47	10	3	2	2	3
Memphis, Tenn.	U	U	U	U	U	U	U
Mobile, Ala.	75	49	16	8	1	1	-
Montgomery, Ala.	39	26	11	2	-	-	1
Nashville, Tenn.	118	67	29	18	3	1	8
W.S. CENTRAL	1,551	984	331	155	36	44	59
Austin, Tex.	85	49	18	14	1	3	4
Baton Rouge, La.	38	23	10	5	-	-	1
Corpus Christi, Tex.	56	37	11	3	3	2	2
Dallas, Tex.	216	134	40	22	8	12	5
El Paso, Tex.	82	51	16	10	3	2	4
Ft. Worth, Tex.	104	71	23	6	-	4	2
Houston, Tex.	349	219	82	32	7	8	18
Little Rock, Ark.	85	55	19	4	1	6	3
New Orleans, La.	165	93	34	26	9	3	-
San Antonio, Tex.	195	131	42	18	2	2	11
Shreveport, La.	62	43	14	4	-	1	1
Tulsa, Okla.	114	78	22	11	2	1	8
MOUNTAIN	843	541	182	78	26	16	58
Albuquerque, N.M.	96	56	23	13	2	2	1
Colo. Springs, Colo.	53	34	16	-	2	1	2
Denver, Colo.	111	68	26	10	3	4	12
Las Vegas, Nev.	156	105	38	9	4	-	8
Ogden, Utah	27	23	3	1	-	-	2
Phoenix, Ariz.	165	94	34	20	11	6	13
Pueblo, Colo.	17	14	2	1	-	-	-
Salt Lake City, Utah	94	66	12	11	3	2	12
Tucson, Ariz.	124	81	28	13	1	1	8
PACIFIC	1,966	1,351	343	167	57	48	144
Berkeley, Calif.	13	10	3	-	-	-	2
Fresno, Calif.	54	31	12	5	3	3	2
Glendale, Calif.	28	17	4	5	1	1	4
Honolulu, Hawaii	59	43	9	7	-	-	2
Long Beach, Calif.	71	48	15	3	1	4	9
Los Angeles, Calif.	650	425	125	65	24	11	33
Pasadena, Calif.	25	18	3	2	-	2	1
Portland, Oreg.	131	92	19	6	10	4	6
Sacramento, Calif.	147	108	24	11	2	2	13
San Diego, Calif.	133	93	19	10	3	8	26
San Francisco, Calif.	113	75	24	7	2	5	11
San Jose, Calif.	213	154	29	23	5	2	21
Santa Cruz, Calif.	21	17	2	1	1	-	3
Seattle, Wash.	166	118	29	15	3	1	6
Spokane, Wash.	54	41	11	1	-	1	4
Tacoma, Wash.	88	61	15	6	2	4	1
TOTAL	12,296¶	8,131	2,349	1,153	368	283	671

U: Unavailable -: no reported cases

*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.

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