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Assessment of Infant Sleeping Position — Selected States, 1996

Sudden infant death syndrome (SIDS) is the leading cause of postneonatal mortality in the United States (*1*). In 1992, the American Academy of Pediatrics (AAP) recommended that all healthy babies be put to sleep either on their back or side to reduce the risk for SIDS (*2*). In 1994, a national "Back to Sleep" education campaign was initiated to encourage the public and health-care providers to put babies to sleep on their back or side (*3*). In November 1996, the AAP modified its policy to preferentially recommend putting infants on their back because of the lower risk for SIDS associated with this position relative to the side position (*4*). To assess adherence to recommendations for infant sleeping position, CDC analyzed population-based data on the usual infant sleeping position for 1996 births by race from 10 states participating in the Pregnancy Risk Assessment Monitoring System (PRAMS). This report summarizes the results of that analysis and indicates that infant sleeping position varied by state and race.

PRAMS is an ongoing, state-based surveillance system of maternal behaviors before, during, and after pregnancy. Each month, PRAMS surveys a random sample of mothers who have given birth during the previous 2–6 months by using stratified, systematic sampling of resident birth certificates. A questionnaire is mailed to each mother, and a second questionnaire is mailed to nonrespondents. Nonrespondents are then contacted by telephone. Most states oversample mothers of low birthweight (<5 lbs, 8 oz [<2500 g]) infants, and four states oversample women of selected racial groups. Details of the survey design, questionnaire, and other operational aspects of the survey have been published (*5*).

Mothers were asked, "How do you put your new baby down to sleep most of the time?" Response categories included on the baby's side, back, or stomach. Statistical weights were applied to account for sampling probability, nonresponse, and sampling frame coverage in each state. The state-specific response rate to the entire questionnaire ranged from 71% to 80%. To account for the complex survey design, SUDAAN was used to calculate point estimates and standard errors for each sleeping position by state and maternal race/ethnicity. Women who did not answer the sleeping position question were excluded from the analysis (3.8% of all respondents). Data were analyzed for 15,195 respondents.

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The percentage of respondents who reported usually putting their babies to sleep on their stomach varied by state (from 16.0% in Maine to 30.8% in Alabama) (Table 1). In five southern states, the prevalence of the stomach sleeping position was approximately twofold higher than in the states having the lowest percentages (Maine and Washington). The percentage of respondents who reported putting their babies to sleep on their back was highest in Washington (42.9%) and Alaska (40.8%) and lowest in Georgia (24.5%), Florida (25.4%), and South Carolina (25.8%). In most states, respondents usually put their babies to sleep on their side.

The percentage of black mothers who put their babies to sleep on their stomach was 11%–54% higher than that for white mothers; the percentages ranged from 22.5% in Washington to 42.1% in Florida among black mothers, and from 16.1% in Maine to 30.5% in Oklahoma among white mothers. For American Indians in two states (Washington and Oklahoma), 16.0% and 33.9% of respondents, respectively, reported usually putting their babies to sleep on their stomach. The comparable percentage for Alaska Natives was 23.5% in Alaska.

The median age of infants in Oklahoma (132 days) was at least 1 month older than that in all other states except New York (103 days) and South Carolina (117 days). Median infant age in Washington and Maine, where the prevalence of the stomach sleeping position was lowest, was 98 days and 87 days, respectively.

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Editorial Note: Usual infant sleeping position is monitored periodically to assess the success of efforts to encourage mothers and other caretakers to place babies on their back for sleeping. During 1992–1996, placement on the stomach declined from 70% to 24%, and placement on the back increased from 13% to 35% (*6*). In the PRAMS survey, state-specific prevalence of the stomach sleeping position in 1996 exceeded the national average in five states and was lower than the national average in four states. The variation observed among states may result from differences in infant age at the time the mother responded to the questionaire, the rate of decline since 1992, or the distribution of factors (i.e., maternal age, education, parity, and exposure to health-promotion messages) related to the choice of infant position.

Infants aged ≥16 weeks were more likely to be placed on their stomach than were infants in younger age groups (*6*). However, the relation between the state percentages of babies put to sleep on their stomach and median infant age when mothers responded to the questionnaire was not always consistent. Differences in the rate of decline by state may result from variations in the intensity and effectiveness of efforts to encourage back sleeping through the "Back to Sleep" campaign and other efforts. However, differences in the rate of decline cannot be assessed because state-specific data are not available before 1996. Additional analysis is required to determine whether socioeconomic status, access to health care, or advice by health-care providers in addition to other predictors of infant position are related to the state or race differences found in this report.

The higher rate of stomach sleeping among blacks than whites is consistent with the twofold higher rate reported nationally in a previous study (22% versus 43%) (*6*). The rate for Alaska Natives was similar to the national average but still was higher than that for whites in Alaska. In Washington, the rate for American Indians was comparable to that for whites (16.0% and 16.7%, respectively) and is the lowest rate for

TABLE 1. Percentage distribution of usual infant sleeping position, by maternal race and state — selected states, Pregnancy Risk Assessment Monitoring System, 1996

Race/Sleeping position	Alabama (n=1769)		Alaska (n=973)		Florida (n=1861)		Georgia (n=1547)		Maine (n=1143)		New York (n=1248)		Oklahoma (n=1825)		South Carolina (n=1885)		Washington (n=1532)		West Virginia (n=1412)	
	%	(SE*)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)
White																				
Side	42.8	(1.9)	38.9	(2.2)	44.5	(1.9)	45.8	(2.4)	46.3	(1.7)	41.5	(1.9)	34.8	(2.0)	43.2	(1.9)	40.8	(2.3)	44.2	(2.0)
Back	30.0	(1.7)	43.5	(2.2)	28.2	(1.7	27.7	(2.2)	37.6	(1.6)	35.7	(1.9)	34.7	(2.0)	27.9	(1.7)	42.5	(2.3)	35.6	(1.9)
Stomach	27.2	(1.7)	17.7	(1.8)	27.3	(1.7)	26.6	(2.1)	16.1	(1.2)	22.8	(1.7)	30.5	(2.0)	28.9	(1.7)	16.7	(1.8)	20.2	(1.6)
Black																				
Side	42.0	(2.7)	—†		43.1	(2.3)	44.7	(2.2)	—		44.7	(6.8)	45.5	(6.6)	44.0	(2.7)	40.9	(3.0)	56.5	(11.1)
Back	19.5	(2.2)	—		14.7	(1.6)	16.5	(1.2)	—		21.5	(5.6)	20.6	(5.4)	22.5	(2.3)	36.5	(3.0)	20.4	(7.4)
Stomach	38.5	(2.7)	—		42.1	(2.3)	38.8	(2.1)	—		33.9	(6.5)	33.9	(6.2)	33.5	(2.6)	22.5	(2.5)	23.0	(10.0)
Alaska Native																				
Side	—		37.3	(2.3)	—		—		—		—		—		—		—		—	
Back	—		39.2	(2.3)	—		—		—		—		—		—		—		—	
Stomach	—		23.5	(7.6)	—		—		—		—		—		—		—		—	
American Indian																				
Side	—		—		—		—		—		—		36.1	(6.1)	—		41.2	(2.4)	—	
Back	—		—		—		—		—		—		41.5	(6.2)	—		41.9	(2.5)	—	
Stomach	—		—		—		—		—		—		33.9	(6.2)	—		16.0	(2.6)	—	
All races																				
Side	42.3	(1.5)	39.1	(1.7)	44.3	(1.6)	44.9	(1.7)	46.4	(1.6)	41.5	(1.8)	36.1	(1.9)	43.8	(1.6)	41.0	(2.0)	44.0	(1.9)
Back	27.0	(1.4)	40.8	(1.7)	25.4	(1.4)	24.5	(1.5)	37.5	(1.1)	34.5	(1.6)	33.8	(1.8)	25.8	(1.4)	42.9	(2.0)	35.1	(1.8)
Stomach	30.8	(1.4)	20.1	(1.4)	30.3	(1.4)	30.6	(1.6)	16.0	(1.2)	24.0	(1.6)	30.2	(1.8)	30.4	(1.4)	16.2	(1.5)	20.8	(1.5)

* Standard error.
† Sample size too small for meaningful analysis.

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any racial group in the 10 states. In comparison, in Oklahoma the rate for American Indians was the same as that for blacks (33.9%). These findings suggest that infant sleep positioning practices vary within groups of American Indians and may explain the unequal risk for SIDS found among American Indians (*7*).

The findings in this report are subject to at least three limitations. First, PRAMS does not collect information from adoptive mothers or birth mothers who put their infants up for adoption, no longer care for their infants, or are nonresidents of the states in which they gave birth. Second, misclassification of sleep position may have occurred because mothers had difficulty recalling or assigning the sleep position they used most of the time. Because the question solicits only one response, mothers who selected multiple responses to the question were not included in the analysis. Finally, the survey did not include other sleep-related questions such as stability of the initial sleep position during the night and changes in positioning with increasing infant age. Infant age at the time of the mother's response varied by state and may explain why some mothers whose infants were older reported using a stomach position.

Despite these limitations, the findings in this report provide useful data that states can use as a baseline to measure progress toward the national goal of the "Back to Sleep" campaign to reduce the percentage of infants put to sleep on their stomach to ≤10% by 2000 (*4*). The 38% decline in SIDS during 1992–1996 in the United States is associated with the substantial declines observed in the percentage of infants put to sleep on their stomach (*2,8*).

Innovative communication strategies and outreach programs are needed to educate all persons who care for infants, particularly blacks and certain American Indian populations, to reduce the proportion of babies placed to sleep on their stomach. These risk-reduction strategies must consider cultural and other barriers to adopting the recommended infant sleeping position and/or the appropriateness of the health-education message for high-risk groups. In designing outreach programs to promote the recommended infant sleeping position, public health officials also should consider factors that influence a caregiver's behavior, such as advice given by a health-care provider, mother's observation of a newborn's health-care provider, experience with previous children, or presence of a grandmother in the home (*6,8,9*). Decreasing the difference in SIDS rates in high-risk populations will require new educational efforts and the identification and modification of the risk factors that contribute to the disparity in mortality.

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Endotoxin-Like Reactions Associated with Intravenous Gentamicin — California, 1998

During April 30–July 26, 1998, 20 patients at a major medical center (hospital A) in Los Angeles County, California, developed severe shaking chills often accompanied by fever, tachycardia, and/or a decrease of ≥20 mm Hg in systolic blood pressure within 3 hours after receiving intravenous (IV) gentamicin. Receipt of IV gentamicin was the only medication or procedure temporally associated with reactions among all of the patients. No deaths or serious sequelae were associated with the reactions. Similar incidents were reported by hospital personnel from six other states to CDC or the Food and Drug Administration (FDA) during April–August 1998. All reported reactions were associated with once-daily dosing regimens of gentamicin (lot numbers 170704, 180031, 180133, and 180191) produced by Fujisawa USA, Inc. (Deerfield, Illinois).* On August 13, the Los Angeles County Department of Health Services and CDC initiated an investigation with the assistance of hospital A personnel. This report summarizes the results of this investigation at hospital A, which found that gentamicin with endotoxin levels within the U.S. Pharmacopeia (USP) standards may deliver endotoxin amounts above the threshold for pyrogenic reactions with once-daily dosing.

A gentamicin-associated adverse reaction was defined as documented chills, rigors, or shivering within 3 hours after the start of IV gentamicin administration. A case-patient was defined as any hospital A patient aged ≥28 days who had one or more gentamicin-associated adverse reactions from December 1, 1997, through August 25, 1998. Two schedules for gentamicin dosing were used: traditionally dosed (TD) gentamicin was defined as gentamicin administered at intervals of 8, 12, or 16 hours, and once-daily–dosed (ODD) gentamicin was defined as gentamicin administered at intervals of ≥24 hours. The protocol for gentamicin dosing at hospital A is based on a dose of 7 mg/kg of body weight per day. Computerized pharmacy records were used to identify all patients who received gentamicin during three time periods: 1) the pre-epidemic period (December 1, 1997–January 15, 1998), before the suspected lots of Fujisawa gentamicin were delivered to the hospital; 2) the epidemic period (May 1–July 29, 1998), when the suspected lots of Fujisawa gentamicin were used; and 3) the postepidemic period (July 30–August 25, 1998), when gentamicin from another manufacturer was used. For the pre-epidemic period, the records of all patients who received ODD gentamicin from Fujisawa were reviewed. For the epidemic period, the records of all patients who received either ODD or TD gentamicin from Fujisawa dur-

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

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ing the first half of the 12-week epidemic period (May 1–June 15, 1998) were reviewed. For the postepidemic period, the records of all patients who received ODD gentamicin from another manufacturer were reviewed. Hospital A began using gentamicin from another manufacturer on July 29 with no other change in gentamicin administration policy or practices. Patients were excluded if they were aged <28 days, had incomplete medical records, or received both TD and ODD gentamicin during their hospital stay.

Of the 289 patients whose medical records were reviewed, 67 were excluded; eight because the patient was aged <28 days, 23 because medical record information was incomplete, and 36 because they received both TD and ODD gentamicin. Of the remaining 222 patients, 48 received gentamicin during the pre-epidemic period; 154, during the epidemic period (76 received TD gentamicin and 78 received ODD gentamicin); and 20, during the postepidemic period.

Of the 222 patients who received gentamicin, 24 had a gentamicin-associated reaction. Of these, two (8%) received gentamicin during the pre-epidemic period; 22 (92%), during the epidemic period; and none, during the postepidemic period. The mean age of case-patients was 40 years (range: 18–69 years), and 17 (71%) were women. Indications for gentamicin use included obstetric or gynecologic infections (12), fever and neutropenia (eight), gastrointestinal infections (three), or osteomyelitis (one). During the epidemic period, the adverse reaction rate among patients with ODD gentamicin (20 of 78) was significantly higher than that among patients with TD gentamicin (two of 76; relative risk [RR]=9.7; 95% confidence interval [CI]=2.4–40.3). In addition, among persons receiving ODD gentamicin, the adverse reaction rate during the epidemic period was significantly greater than during the pre-epidemic (two of 48; RR=6.15; 95% CI=1.5–25.2) or the postepidemic (none of 20; RR=indefinite; $p<0.01$) period. Among patients who received ODD gentamicin during the epidemic period, the weight of case-patients did not differ significantly from that of noncase-patients (mean weight: 162 lbs [73 kg]). Compared with noncase-patients, case-patients received higher doses (370 mg compared with 427 mg; $p=0.01$) and higher doses per kilogram of body weight (mean dose/kg body weight: 5.6 mg/kg compared with 6.2 mg/kg; $p<0.01$).

Samples of Fujisawa gentamicin from hospital A were examined for bacterial and/or endotoxin contamination. Bacterial cultures were negative. Endotoxin levels ranged from 25.6 to 32.0 endotoxin units (EU)/mL (median: 32 EU/mL); samples of gentamicin from another manufacturer that was used at hospital A had endotoxin levels <2.0 EU/mL. The USP limit for endotoxins in antibiotic formulations is 68 EU/mL or 1.7 EU/mg.

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Editorial Note: Gentamicin is an aminoglycoside antibiotic used to treat serious gram-negative bacterial infections (*1*). First described and characterized during the early 1960s, gentamicin inhibits bacterial protein synthesis, is rapidly bactericidal, and is usually given in divided daily doses every 8–12 hours. The two most important side

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effects from gentamicin are ototoxicity and nephrotoxicity. To minimize toxicity and simplify administration, once-daily dosing increasingly has been used. Clinical trials have found ODD gentamicin to be safe and effective, with no increase in adverse reactions and possibly a decrease in nephrotoxicity and ototoxicity (*2,3*). However, this dosing regimen is considered an off-label use (i.e., not included in product label information) by FDA. Typical doses are 5–7 mg/kg body weight. Approximately 28% of all IV gentamicin administered in the United States is given using once-daily dosing (CDC, unpublished data, 1998).

ODD gentamicin probably was associated with these reactions because of the amount of gentamicin received at one time in this regimen. Parenteral antimicrobials such as gentamicin may contain small amounts of endotoxin. Endotoxin, a lipopolysaccharide found in the cell walls of gram-negative bacteria, may cause chills, fever, and systemic cardiovascular effects when infused into humans. The minimum level of endotoxin to cause pyrogenic activity is approximately 5 EU/kg body weight (*4–6*). Endotoxin levels responsible for clinical reactions have been reported previously for dialysate or medications (*7–9*). With traditional dosing, endotoxin present in the gentamicin solution is administered in two to three doses over a 24-hour period. In this outbreak, once-daily dosing may have resulted in the delivery of large enough volumes or amounts of gentamicin with sufficient endotoxin over 1 hour to stimulate a pyrogenic reaction even if the endotoxin concentration was below the USP limit of 68 EU/mL or 1.7 EU/mg. For example, a patient who received a once-daily 5-mg/kg body weight dose of IV gentamicin with the level of endotoxin measured in the Fujisawa product (32 EU/mL or 0.8 EU/mg) would receive 4 EU/kg body weight, whereas a patient who received a once-daily 7-mg/kg body weight dose of IV gentamicin would receive 5.6 EU/kg body weight of endotoxin; the latter is above the threshold of 5 EU/kg body weight for pyrogenic reactions.

Pyrogenic reactions have not been reported in studies involving ODD gentamicin. Studies are in progress to determine the extent of these reactions and to identify their etiology. Physicians using ODD gentamicin should be aware that a patient may receive a level of endotoxin two to three times higher than that of TD gentamicin.

FDA and CDC are aware of 37 additional episodes of endotoxin-like reactions associated with IV gentamicin in seven states. FDA's Division of Anti-Infective Drug Products received reports of pyrogenic reactions from Fujisawa only. Clinicians detecting such reactions in patients within 3 hours after gentamicin administration should report these episodes to CDC's Hospital Infections Program, National Center for Infectious Diseases, telephone (404) 639-6442 or fax (404) 639-6459, and to MedWatch, FDA Medical Products Reporting Program, telephone (800) 332-1088; fax (800) 332-0178; mail to Med Watch, 5600 Fishers Lane, Rockville MD 20852-9787; or on the World-Wide Web site http://www.fda.gov/medwatch.

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Near Fatal Ingestion of Household Lamp Oil — Ohio, August 1997

Unintentional poisoning from liquid fuels accounts for approximately 2.5% of all unintentional poisoning exposures among children aged <6 years (*1*). The risk for unintentional poisoning increases when fuel is transferred from its original container, often with required child-resistant packaging, to other containers (e.g., fuel lamps) without special packaging requirements (*2,3*). This report describes the poisonings of four children who were admitted to a regional referral medical center in Columbus, Ohio, during a 2-week period in August 1997; these children developed serious pulmonary complications after ingesting household lamp oil.

CASE REPORTS

Case 1. On August 11, a 13-month-old boy was given ipecac inappropriately by his father after ingesting up to ½ cup of lamp oil. The child vomited and became lethargic. On arrival at a community emergency department (ED), he was cyanotic and had nasal flaring. He was intubated because of respiratory insufficiency and was transported to a tertiary-care medical center. His hemoglobin level was 11.9 g/dL (normal: 11.5 g/dL–13.5 g/dL) and was not remeasured. On August 15, he was extubated. His condition improved except for a productive cough, which was treated with antibiotics. On August 18, he was discharged with no further difficulty breathing.

Case 2. On August 14, a 7-month-old girl was taken to a local ED because of episodes of tachypnea, retractions, rhonchi, and coughing. Her first chest radiograph was normal. She was transported to a tertiary-care medical center, where she was intubated because of increasing respiratory distress. Additional chest radiographs showed infiltrates in the right and left lung fields, and pneumonia was presumptively diagnosed. Her hemoglobin level decreased from 12.7 g/dL on August 14 to 9.8 g/dL on August 15. She developed pneumothorax, which was treated with tube thoracostomy. She suffered a cardiac arrest but was resuscitated. After resuscitation, extracorporeal membrane oxygenation (ECMO) was started. She required multiple blood transfusions to maintain adequate oxygenation. Blood and sputum cultures did not identify a bacterial cause for pneumonia. ECMO was continued for 5 days, and conventional mechanical ventilation was continued for an additional 3 days. On August 22, the patient was extubated and had no further difficulty breathing. Although a computerized tomography scan of the head showed cloudiness and loss of grey-white differentiation that was consistent with substantial ischemic damage, a

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neurodevelopmental assessment showed no deficits. On August 27, she was discharged. On August 16, her mother found a empty oil lamp in the girl's play area at home. Although the mother believed the lamp was empty before the child became ill, she recalled that symptoms developed shortly after the girl began playing with the lamp.

Case 3. On August 19, a 20-month-old boy drank ½–1 cup of a commercial lamp oil. He immediately began drooling, coughing, and wheezing, and he became lethargic. On arrival at a local ED, he was unresponsive except to noxious stimuli. On physical examination, he had intercostal and subcostal retractions. He was intubated because of increasing respiratory insufficiency, and a chest radiograph showed bilateral pulmonary infiltrates. His hemoglobin level was 11.8 g/dL and decreased to 9.0 g/dL the next day. On August 22, he was extubated but developed severe respiratory distress and was reintubated. He developed fever of 104 F (40 C) and had seizures. He was administered intravenous phenytoin and antibiotics. On August 23, he was extubated. On August 27, he was discharged, and no further seizures occurred.

Case 4. On August 25, a 10-month-old boy drank 1 cup of kerosene from a household oil lamp. The same day, he was taken to an ED with coughing, grunting, and nasal flaring. On arrival, he was intubated because of respiratory distress. A chest radiograph showed bilateral pulmonary infiltrates. His hemoglobin level was 12 g/dL; the next day, it decreased to 10.4 g/dL. On August 27, he was extubated. The same day, antibiotics were administered because of purulent sputum, which later grew *Streptococcus pneumoniae*. On August 31, he was discharged and given oral antibiotics and had no difficulty breathing.

SUMMARY EVALUATION

All four patients were poisoned from oil from the same type of lamp that has a central oil reservoir in which a wick is placed. The wick is encased in a glass sleeve, which can be used as a "straw" by children. The attractiveness of these lamps, the relatively large volume of lamp oil that they contain, and the "straw" around the wick all increase the risk for ingestion and aspiration. Because of the poisoning of these four children, a series of local radio and television public service announcements was aired in an attempt to prevent further occurrences.

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Editorial Note: The U.S. Consumer Product Safety Commission (CPSC) estimates that approximately 2300 children aged <5 years are treated in hospital EDs each year because of poisoning by petroleum distillates that are not required to be in child-resistant packaging (*1*). Petroleum distillates, a group of hydrocarbon-based chemicals refined from crude oil, include gasoline, kerosene, mineral spirits, and paraffin. Lamp oil consists of a combination of petroleum distillates that differ by manufacturer. Some preparations of lamp oil contain aromatic hydrocarbons, or various scents and dyes, including aniline dyes that can contribute to additional toxicities (*3*). In 1996, the regional poison-control center in Columbus, Ohio, reported 95 lamp oil ingestions. In 1996 in the United States, the American Association of Poison Control Centers (AAPCC) Toxic Exposure Surveillance System (TESS) reported 2879 lamp oil ingestions (AAPCC, TESS, unpublished data, 1998).

Ingestion of Household Lamp Oil — Continued

Ingestion is the most common route of exposure to hydrocarbons, including lamp oil. The viscosity of the oil is an important property because it relates directly to the risk for pulmonary aspiration. Compounds with low viscosity and high volatility (e.g., gasoline, kerosene, and lighter fluid), can spread over mucosal surfaces easily and rapidly (*4*). When ingested, hydrocarbons produce toxic effects in several organs and organ systems including the pulmonary and central nervous systems, the gastrointestinal and cardiovascular systems, and the hematopoietic system; some hydrocarbons cause acute intravascular hemolysis (*3*). Among these, the most serious damage occurs to the pulmonary system. Chemical pneumonitis is the greatest cause of death and injury (*2–4*).

Under the Poison Prevention Packaging Act, the CPSC enforces the requirement that any prepackaged, low-viscosity, liquid-kindling or illuminating fuels that contain at least 10% petroleum distillates must be supplied with child-resistant packaging (*5*). However, lamp oil is usually sold in separate prepackaged containers with child-resistant packaging, and the oil is later transferred to fuel lamps. The CPSC regulates products in their original containers and has not promulgated child-resistant packaging requirements for fuel lamps unless the lamp is sold containing the fuel. The CPSC is exploring additional measures to help avoid these ingestions.

Pediatricians, poison-control centers, public safety groups, and others interested in childhood injury prevention should increase public awareness concerning the risk for poisoning caused by household lamp oil. Parents should be warned to keep lamps out of the reach of children, close prepackaged containers after every use, and ensure child-resistant caps are fastened correctly. Parents should also keep lamp oils in their original containers. If exposure to lamp oil does occur, parents should not induce vomiting and contact the nearest poison-control center (*1,6*).

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Progress Toward Poliomyelitis Eradication — West Africa, 1997–September 1998

In 1988, the World Health Assembly adopted the goal of global eradication of poliomyelitis by 2000 (*1*). Although substantial progress has been reported in many parts of the world toward achieving this goal (*2*), West Africa remains a major reservoir of poliovirus transmission (*3*). This report summarizes progress achieved in the

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15 countries of the World Health Organization (WHO) West African subregion (excluding Nigeria) during 1997–1998, reviews the implementation of polio eradication strategies, and suggests that, if activities are intensified and adequate resources are provided, achieving the eradication goal by the target date remains feasible.

Reported routine coverage with three doses of oral poliovirus vaccine (OPV3) among children aged <1 year remains low in most countries. In 1997, only three (Algeria, Benin, and The Gambia) of 15 countries reported that >70% of children were vaccinated routinely with OPV3 (Table 1).

During January 1997–June 1998, all but two countries (Sierra Leone and Liberia) in the subregion administered supplementary OPV doses during National Immunization Days (NIDs)*. Efforts are under way to conduct NIDs in these two countries before the end of 1998. NIDs were held for the first time during January 1997–June 1998 in The Gambia, Guinea, Guinea-Bissau, Mali, Niger, and Senegal. Vaccination coverage in all countries was reported at ≥80% for both rounds (Table 1).

As of September 1998, surveillance for acute flaccid paralysis (AFP) had not been established in The Gambia, Liberia, Mauritania, and Sierra Leone. During January–September 1998, 189 cases of AFP were reported in the West African subregion (Table 1); the nonpolio AFP rate for the subregion (an indicator of the sensitivity of the surveillance system) was 0.40 cases per 100,000 children aged <15 years (target: nonpolio AFP rate of ≥1 per 100,000). Most countries reported nonpolio AFP rates of ≤0.30, except Algeria (0.66), Benin (0.43), Ghana (0.49), and Côte d'Ivoire (0.72). In 44% of AFP cases, two specimens were collected within 14 days of onset of paralysis. In all countries, the geographic distribution of reported AFP cases did not cover more than half of the country; cases were concentrated near the capital city and/or near the coast. In Ghana, 42% of AFP cases had stool specimens collected >21 days after onset of paralysis, and 23% were collected >28 days after onset. Almost none of reported AFP cases had a 60-day follow-up examination.

During January–September 1998, wild poliovirus type 1 was isolated from 15 AFP cases in Benin (one case), Burkina Faso (three), Ghana (three), Côte d'Ivoire (four), Niger (two), and Senegal (two) (Table 1). In Benin, Burkina Faso, Ghana, and Côte d'Ivôire, wild poliovirus type 1 was isolated after the second year of NIDs. Partial genomic sequence analysis of virus isolates from AFP cases with onset of paralysis in 1998 from Benin, Burkina Faso, Côte d'Ivoire, Ghana, and Niger indicates that transmission is still occurring within and between these countries. Sequence analysis indicates three different genotypes of wild poliovirus type 1 were isolated after the second NID round both in Ougadougou, Burkina Faso, and Abidjan, Côte d'Ivoire.

Reported by: Inter-Country Program, Expanded Program on Immunization, World Health Organization Sub-Regional Office for West Africa, Abidjan, Côte d'Ivoire. Expanded Program on Immunization, World Health Organization Regional Office for Africa, Harare, Zimbabwe. Global Program for Vaccines and Immunization, World Health Organization, Geneva, Switzerland. Respiratory and Enteric Viruses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Vaccine-Preventable Disease Eradication Div, National Immunization Program, CDC.

Editorial Note: In 1989, the WHO African Regional Committee adopted the global goal of eradicating poliomyelitis by 2000 (*4*), and polio eradication remains a high priority

*Mass campaigns over a short period (days to weeks) in which two doses of oral poliovirus vaccine are administered to all children in the target group (usually aged 0–4 years) regardless of previous vaccination history, with an interval of 4–6 weeks between doses.

TABLE 1. Vaccination coverage with three doses of oral poliovirus vaccine (OPV3) and number of confirmed polio cases during 1997, vaccination coverage during National Immunization Days (NIDs)*, number of acute flaccid paralysis (AFP) cases, number of cases with wild virus isolated, and nonpolio AFP rates, January–September 1998 — West African subregion

Country	1997 OPV3 coverage	No. confirmed polio cases for 1997 (wild virus isolated cases)	NIDs coverage†		1998			
			Round 1	Round 2	No. nonpolio AFP cases expected	No. AFP cases reported	Cases with wild virus isolated	Nonpolio AFP rate§
Algeria	79%	0	92%	92%	120	59	0	0.66
Benin	71%	2	100%	100%	25	9	1	0.43
Burkina Faso	40%	3 (2)	100%	100%	45	13	3	0.30
Côte d'Ivoire	70%	3 (3)	100%	NR¶	63	38	4	0.72
The Gambia	98%	0	NR	NR	5	0	0	0**
Ghana	61%	4 (2)	98%	102%	85	34	3	0.49
Guinea	53%	0	100%	100%	33	3	0	0.12
Guinea-Bissau	63%	0	NR	NR	5	NR	NR	NR
Liberia	45%	NR	NC††	NC	10	0	0	0**
Mali	52%	0	95%	100%	45	10	0	0.30
Mauritania	28%	0	90%	93%	11	4	pending	0**
Niger	28%	6 (5)	88%	95%	50	13	2	0.29
Senegal	65%	2 (1)	97%	100%	42	2	2	0
Sierra Leone	33%	NR	NC	NC	20	1	0	0.07**
Togo	40%	1 (1)	99%	100%	22	3	pending	0.10
Total		**21 (14)**			**581**	**189**	**15**	**0.40**

*Mass campaigns over a short period (days to weeks) in which two doses of oral poliovirus vaccine are administered to all children in the target group (usually aged 0–4 years) regardless of previous vaccination history, with an interval of 4–6 weeks between doses.
†January 1997–June 1998.
§Annualized nonpolio AFP rate.
¶Not reported.
**AFP surveillance system not yet established.
††No NIDs conducted.

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in the African Region. The countries of the Organization of African Unity (OAU) emphasized in the declaration of Yaoundé, Cameroon, of July 1996 their determination to achieve this goal by implementing the WHO-recommended strategies. In August 1996, the WHO Regional Office launched the initiative "Kick Polio Out of Africa."

Substantial progress toward polio eradication has been made, although widespread transmission of poliovirus continues throughout western Africa because of 1) intense poliovirus transmission before the start of NIDs associated with very low routine OPV3 coverage rates, and 2) actual coverage rates lower than reported coverage rates with supplemental OPV doses during NIDs. Program reviews are planned to gain a better understanding of the factors associated with the continuing high level of wild poliovirus transmission.

The performance of AFP surveillance remains at low levels in most countries. There is a lack of rapid case investigation, collection of adequate stool specimens, and 60-day follow-up examination, limiting the probability that polio cases are confirmed based on isolation of wild poliovirus. High-quality AFP surveillance is essential to assess the impact of polio eradication strategies and, at later stages, to guide interventions aimed at interrupting transmission of wild poliovirus in the remaining virus reservoirs.

Emphasis should be placed on active surveillance at the provincial level to improve the completeness and timeliness of detection, reporting and investigation of AFP cases, and collection of adequate stool specimens. Additional personnel are needed immediately to conduct active surveillance, and additional provisions are required to support operational expenses, especially transportation at the provincial level.

A functional regional laboratory network has been established to provide rapid virus isolation, intratypic differentiation, and genomic sequencing. However, the usefulness of this network is limited by insufficient surveillance for AFP and limited collection of stool specimens.

Rapid success of polio eradication activities in West Africa is substantially constrained by relatively low levels of routine vaccination coverage in several countries. In some countries, it will not be possible to increase routine OPV3 coverage levels to at least 80% of the population aged <1 year by 2000. Additional vaccination rounds during NIDs are required in most areas to achieve the eradication goal.

The experience from the Americas and the Western Pacific Region indicates that poliovirus transmission can be interrupted even in the absence of high routine OPV3 coverage levels if comprehensive, high-quality vaccination campaigns, complemented by high quality AFP surveillance and "mopping-up"[†] activities, are conducted (*5*). Financial support is committed for NIDs and surveillance; however, additional financial resources[§] will be needed for additional vaccination rounds and "mopping-up."

[†]Focal mass campaigns in high-risk areas during a short period (days to weeks) in which two doses of OPV are administered during house-to-house visits to all children in the target age groups, regardless of previous vaccination history, with an interval of 4–6 weeks between doses.

[§]The polio eradication initiative is supported by individual countries in which polio is endemic. In addition, external support for Africa is provided primarily by WHO; United Nations Children's Fund (UNICEF); the governments of Canada, Germany, Japan, United Kingdom, and United States (through USAID and CDC); and Rotary International.

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Governments in the West African subregion are pursuing polio eradication vigorously, even though meningitis, measles, and other diseases are of higher immediate priority in many countries. The polio eradication initiative helps to build integrated surveillance systems and to develop strategies to extend routine vaccination services to previously unreached populations. Provided that additional resources are made available, countries of the subregions will be able to accelerate the initiative to ensure interruption of poliovirus transmission by 2000 (*6*).

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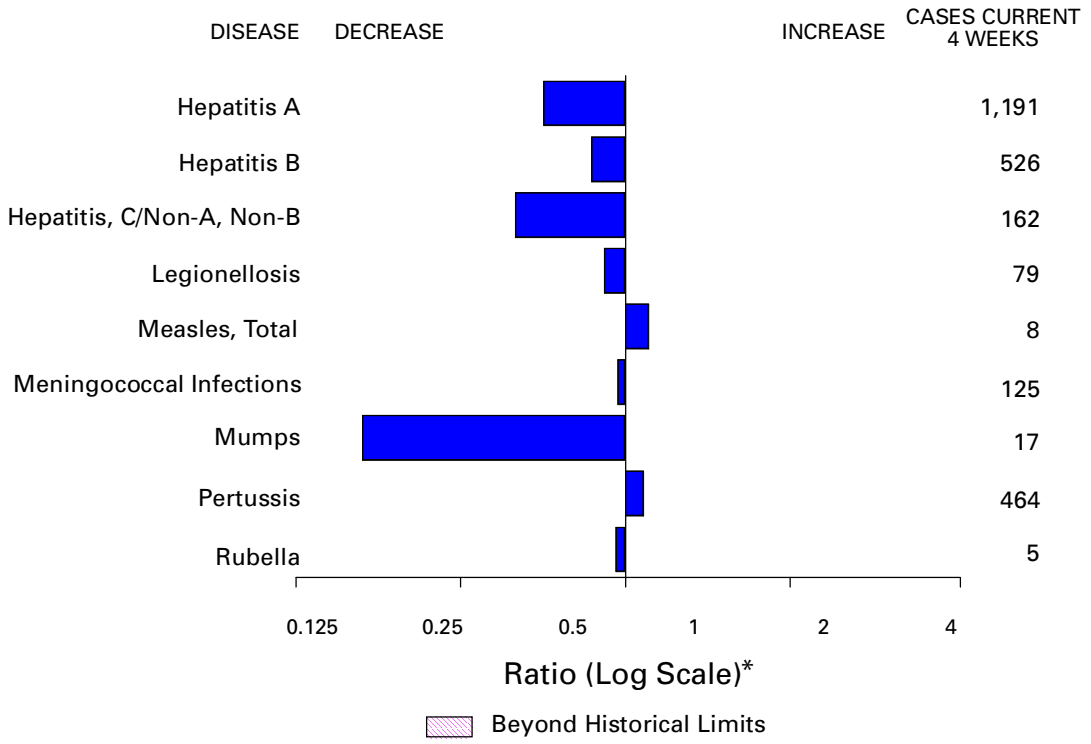
FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending October 17, 1998, with historical data — United States



*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 — provisional cases of selected notifiable diseases, United States, cumulative, week ending October 17, 1998 (41st Week)

	Cum. 1998		Cum. 1998
Anthrax	-	Plague	7
Brucellosis	42	Poliomyelitis, paralytic	1
Cholera	7	Psittacosis	32
Congenital rubella syndrome	3	Rabies, human	-
Cryptosporidiosis*	2,621	Rocky Mountain spotted fever (RMSF)	264
Diphtheria	1	Streptococcal disease, invasive Group A	1,728
Encephalitis: California*	80	Streptococcal toxic-shock syndrome*	41
eastern equine*	4	Syphilis, congenital¶	307
St. Louis*	18	Tetanus	34
western equine*	-	Toxic-shock syndrome	105
Hansen Disease	90	Trichinosis	10
Hantavirus pulmonary syndrome*†	15	Typhoid fever	264
Hemolytic uremic syndrome, post-diarrheal*	60	Yellow fever	-
HIV infection, pediatric*§	178		

-: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–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update September 27, 1998.
¶ Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending October 17, 1998, and October 11, 1997 (41st Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997
UNITED STATES	35,486	45,134	420,421	365,632	2,379	1,477	252,708	230,927	3,203	2,777
NEW ENGLAND	1,381	1,895	14,851	14,027	282	228	4,266	4,672	57	48
Maine	24	46	795	799	33	-	57	57	-	-
N.H.	28	29	716	631	41	42	73	75	-	-
Vt.	17	31	328	327	18	15	33	44	-	3
Mass.	712	640	6,621	5,697	131	132	1,756	1,673	54	38
R.I.	94	119	1,808	1,591	11	1	299	356	3	7
Conn.	506	1,030	4,583	4,982	48	38	2,048	2,467	-	-
MID. ATLANTIC	9,642	13,768	48,075	45,076	245	64	28,344	29,766	294	255
Upstate N.Y.	1,102	2,133	N	N	187	-	4,914	5,081	230	185
N.Y. City	5,457	7,287	26,902	21,428	6	12	11,993	10,970	-	-
N.J.	1,765	2,742	8,087	7,871	52	42	5,193	6,068	-	-
Pa.	1,318	1,606	13,086	15,777	N	10	6,244	7,647	64	70
E.N. CENTRAL	2,567	3,369	68,738	48,028	364	268	49,075	31,066	408	460
Ohio	540	722	20,060	17,475	100	57	13,011	11,390	7	16
Ind.	414	444	4,656	7,106	80	40	3,634	4,712	5	12
Ill.	993	1,346	19,539	U	86	39	16,354	U	28	76
Mich.	468	648	16,435	14,800	98	59	12,629	11,198	368	331
Wis.	152	209	8,048	8,647	N	73	3,447	3,766	-	25
W.N. CENTRAL	664	902	23,655	25,505	441	336	11,933	11,192	262	50
Minn.	136	156	4,938	5,227	215	181	1,874	1,810	9	3
Iowa	58	85	2,063	3,407	84	48	660	893	8	25
Mo.	312	446	9,492	9,526	40	51	6,867	5,779	237	9
N. Dak.	4	10	616	669	10	15	51	54	-	2
S. Dak.	13	8	1,213	1,057	25	31	187	115	-	-
Nebr.	59	83	1,484	2,055	42	-	509	913	3	2
Kans.	82	114	3,849	3,564	25	10	1,785	1,628	5	9
S. ATLANTIC	9,235	11,113	84,516	73,421	194	133	69,875	72,548	142	192
Del.	112	183	2,020	3	-	2	1,173	965	-	-
Md.	1,304	1,682	5,821	5,582	27	12	7,120	9,102	8	6
D.C.	691	828	N	N	1	-	2,776	3,436	-	-
Va.	688	880	10,767	9,217	N	42	7,196	6,625	11	23
W. Va.	70	88	1,988	2,289	8	6	628	710	6	16
N.C.	638	680	17,443	13,562	46	43	15,185	13,475	19	41
S.C.	604	621	13,656	9,937	11	8	8,680	9,225	5	35
Ga.	972	1,265	17,986	12,377	62	-	15,303	14,565	9	-
Fla.	4,156	4,886	14,835	20,454	39	20	11,814	14,445	84	71
E.S. CENTRAL	1,444	1,554	30,697	27,506	100	35	30,198	27,692	170	291
Ky.	222	292	4,991	5,048	30	-	2,910	3,268	18	12
Tenn.	522	631	10,542	10,043	46	31	9,229	8,698	145	195
Ala.	395	384	7,902	6,789	21	2	10,117	9,484	5	10
Miss.	305	247	7,262	5,626	3	2	7,942	6,242	2	74
W.S. CENTRAL	4,202	4,686	64,532	53,103	102	16	38,198	34,436	509	390
Ark.	159	180	2,942	2,405	10	6	2,322	3,976	8	11
La.	708	813	11,554	7,453	5	4	9,823	7,242	75	175
Okla.	238	240	7,826	5,868	13	6	4,304	3,848	12	7
Tex.	3,097	3,453	42,210	37,377	74	-	21,749	19,370	414	197
MOUNTAIN	1,230	1,290	24,167	23,137	289	201	6,738	6,400	296	250
Mont.	23	35	1,041	816	15	-	32	48	7	20
Idaho	19	41	1,580	1,282	35	21	140	114	87	51
Wyo.	1	13	539	455	52	54	26	43	55	63
Colo.	230	313	6,489	5,576	69	52	1,842	1,798	27	27
N. Mex.	179	141	2,738	2,989	17	13	673	695	82	47
Ariz.	499	317	7,833	8,338	21	26	2,838	2,798	5	24
Utah	101	110	1,616	1,361	69	21	178	219	21	4
Nev.	178	320	2,331	2,320	11	14	1,009	685	12	14
PACIFIC	5,121	6,557	61,190	55,829	362	196	14,081	13,155	1,065	841
Wash.	335	527	8,491	7,104	79	56	1,497	1,520	20	22
Oreg.	138	249	4,548	3,830	92	92	659	588	5	3
Calif.	4,500	5,687	44,781	42,294	187	35	11,286	10,333	985	680
Alaska	17	43	1,483	1,191	4	-	254	307	1	-
Hawaii	131	51	1,887	1,410	N	13	385	407	54	136
Guam	-	2	201	193	N	-	24	27	-	-
P.R.	1,246	1,510	U	U	6	U	293	467	-	-
V.I.	24	79	N	N	N	U	U	U	U	U
Amer. Samoa	-	-	U	U	N	U	U	U	U	U
C.N.M.I.	-	1	N	N	N	U	28	19	-	2

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–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update September 27, 1998.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending October 17, 1998, and October 11, 1997 (41st Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998*	Cum. 1997	Cum. 1998
UNITED STATES	939	776	9,634	9,714	1,049	1,442	5,327	6,774	11,395	13,974	5,554
NEW ENGLAND	66	69	2,346	2,592	49	71	62	114	353	351	1,189
Maine	1	2	11	8	5	1	1	-	10	17	184
N.H.	4	7	36	31	5	8	2	-	9	13	69
Vt.	5	11	8	8	1	2	4	-	2	5	55
Mass.	27	25	679	273	16	26	36	57	201	198	421
R.I.	19	7	447	343	4	5	1	2	41	30	78
Conn.	10	17	1,165	1,929	18	29	18	55	90	88	382
MID. ATLANTIC	211	156	6,057	5,570	257	431	211	319	2,215	2,452	1,256
Upstate N.Y.	72	45	3,432	2,267	80	59	32	31	287	332	894
N.Y. City	25	18	19	148	109	270	54	69	1,157	1,252	U
N.J.	11	21	1,227	1,655	44	79	67	131	477	504	162
Pa.	103	72	1,379	1,500	24	23	58	88	294	364	200
E.N. CENTRAL	286	254	103	504	106	138	782	519	973	1,421	120
Ohio	109	92	66	35	14	17	113	176	81	226	52
Ind.	57	43	31	25	10	15	162	139	89	113	10
Ill.	25	26	5	12	33	55	316	U	491	746	14
Mich.	65	59	1	24	42	37	141	111	294	246	34
Wis.	30	34	U	408	7	14	50	93	18	90	10
W.N. CENTRAL	63	40	176	96	76	46	103	152	301	434	584
Minn.	6	1	144	69	42	19	7	16	116	115	103
Iowa	10	9	21	5	8	9	-	7	28	46	131
Mo.	21	8	2	15	15	9	78	100	91	177	24
N. Dak.	-	2	-	-	2	3	-	-	8	10	121
S. Dak.	3	2	-	1	-	1	1	-	16	10	121
Nebr.	16	14	3	2	1	1	4	3	11	16	7
Kans.	7	4	6	4	8	4	13	26	31	60	77
S. ATLANTIC	114	98	704	657	257	258	1,932	2,769	1,609	2,617	1,613
Del.	12	10	34	108	3	5	19	17	18	26	17
Md.	24	17	502	426	72	75	518	751	229	246	387
D.C.	6	4	4	7	15	14	61	90	82	76	-
Va.	16	20	54	50	48	62	120	194	222	254	474
W. Va.	N	N	10	7	2	-	2	3	31	45	64
N.C.	11	13	48	31	23	16	596	729	339	335	136
S.C.	10	7	4	2	6	16	240	310	207	259	121
Ga.	8	-	5	1	33	28	211	432	411	491	245
Fla.	25	27	43	25	55	42	165	243	70	885	169
E.S. CENTRAL	54	44	76	80	24	34	979	1,420	844	1,023	232
Ky.	24	10	18	14	4	12	84	112	134	138	28
Tenn.	18	25	41	37	13	7	460	608	243	359	119
Ala.	5	2	16	9	5	10	222	361	302	331	83
Miss.	7	7	1	20	2	5	213	339	165	195	2
W.S. CENTRAL	36	25	23	63	27	22	859	1,058	1,759	2,004	126
Ark.	-	1	6	18	1	5	89	126	114	153	29
La.	2	3	4	3	14	12	341	293	185	183	-
Okla.	12	1	2	12	4	5	104	102	138	168	97
Tex.	22	20	11	30	8	-	325	537	1,322	1,500	-
MOUNTAIN	56	51	15	11	47	61	166	141	336	454	182
Mont.	2	1	-	-	1	2	-	-	18	6	47
Idaho	2	2	4	3	7	-	2	1	8	8	-
Wyo.	1	1	1	2	-	2	1	-	4	2	55
Colo.	16	17	5	-	17	27	10	12	U	70	35
N. Mex.	2	2	3	1	12	8	22	8	51	53	5
Ariz.	10	12	-	2	8	10	119	105	148	206	12
Utah	20	9	-	1	1	3	3	5	46	26	26
Nev.	3	7	2	2	1	9	9	10	61	83	2
PACIFIC	53	39	134	141	206	381	233	282	3,005	3,218	252
Wash.	9	6	7	8	17	19	27	9	175	241	-
Oreg.	-	-	19	17	15	19	5	9	113	122	7
Calif.	42	32	107	114	169	331	199	262	2,553	2,652	222
Alaska	1	-	1	2	2	3	1	1	35	60	23
Hawaii	1	1	-	-	3	9	1	1	129	143	-
Guam	2	-	-	-	1	-	1	3	36	13	-
P.R.	-	-	-	-	-	5	154	205	68	164	44
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	-	-	-	-	164	9	77	4	-

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

*Additional information about areas displaying "U" for cumulative 1998 Tuberculosis cases can be found in Notice to Readers, *MMWR* Vol. 47, No. 2, p. 39.

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending October 17, 1998, and October 11, 1997 (41st Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	1998	Cum. 1998	1998	Cum. 1998	Cum. 1998	Cum. 1997
UNITED STATES	831	868	16,993	22,411	6,410	7,452	-	55	-	20	75	120
NEW ENGLAND	57	49	213	548	142	139	-	1	-	2	3	19
Maine	2	5	16	52	2	6	-	-	-	-	-	1
N.H.	9	8	10	23	15	12	-	-	-	-	-	1
Vt.	6	3	14	11	4	8	-	-	-	1	1	-
Mass.	34	29	83	227	38	57	-	1	-	1	2	16
R.I.	5	2	14	123	65	14	-	-	-	-	-	-
Conn.	1	2	76	112	18	42	-	-	-	-	-	1
MID. ATLANTIC	122	136	1,113	1,677	845	1,081	-	8	-	5	13	26
Upstate N.Y.	49	44	286	268	230	233	-	1	-	1	2	5
N.Y. City	26	35	254	756	209	392	-	-	-	-	-	10
N.J.	42	40	278	243	168	199	U	7	U	1	8	3
Pa.	5	17	295	410	238	257	U	-	U	3	3	8
E.N. CENTRAL	137	141	2,628	2,336	753	1,165	-	11	-	3	14	10
Ohio	45	76	258	261	64	61	-	-	-	1	1	-
Ind.	36	14	136	241	160	83	-	2	-	1	3	-
Ill.	45	34	446	642	130	219	-	-	-	-	-	7
Mich.	7	16	1,652	1,030	372	342	-	9	-	1	10	2
Wis.	4	1	136	162	27	460	-	-	-	-	-	1
W.N. CENTRAL	76	39	1,167	1,768	329	374	-	1	-	-	1	17
Minn.	59	27	108	157	41	31	-	-	-	-	-	8
Iowa	2	5	379	375	53	31	-	1	-	-	1	-
Mo.	8	4	535	905	196	269	-	-	-	-	-	1
N. Dak.	-	-	3	10	4	5	-	-	-	-	-	-
S. Dak.	-	2	21	19	2	1	-	-	-	-	-	8
Nebr.	1	1	36	75	11	12	-	-	-	-	-	-
Kans.	6	-	85	227	22	25	U	-	U	-	-	-
S. ATLANTIC	171	130	1,555	1,474	915	981	-	3	-	5	8	11
Del.	-	-	3	26	3	6	-	-	-	1	1	-
Md.	48	47	259	161	128	137	-	-	-	1	1	2
D.C.	-	-	46	17	10	27	U	-	U	-	-	1
Va.	16	12	173	182	84	102	-	-	-	2	2	1
W. Va.	5	3	6	10	8	14	-	-	-	-	-	-
N.C.	23	20	99	162	174	202	-	-	-	-	-	2
S.C.	3	4	35	92	31	85	-	-	-	-	-	1
Ga.	37	25	493	391	129	108	-	1	-	1	2	1
Fla.	39	19	441	433	348	300	-	2	-	-	2	3
E.S. CENTRAL	46	46	309	493	326	555	-	-	-	2	2	1
Ky.	7	6	19	65	36	34	-	-	-	-	-	-
Tenn.	26	26	186	303	226	348	-	-	-	1	1	-
Ala.	11	12	61	69	62	59	-	-	-	1	1	1
Miss.	2	2	43	56	2	114	-	-	-	-	-	-
W.S. CENTRAL	47	42	3,223	4,582	1,071	1,014	-	1	-	-	1	8
Ark.	-	2	81	184	77	68	-	-	-	-	-	-
La.	22	11	85	191	122	121	-	1	-	-	1	-
Okla.	23	27	478	1,213	71	38	-	-	-	-	-	1
Tex.	2	2	2,579	2,994	801	787	-	-	-	-	-	7
MOUNTAIN	80	73	2,501	3,494	656	711	-	-	-	-	-	8
Mont.	-	-	86	65	5	8	-	-	-	-	-	-
Idaho	-	1	223	115	38	34	-	-	-	-	-	-
Wyo.	1	4	33	28	5	22	-	-	-	-	-	-
Colo.	18	13	268	332	93	129	-	-	-	-	-	-
N. Mex.	6	7	120	293	274	209	-	-	-	-	-	-
Ariz.	43	29	1,509	1,812	143	167	-	-	-	-	-	5
Utah	5	3	168	486	63	77	-	-	-	-	-	1
Nev.	7	16	94	363	35	65	-	-	-	-	-	2
PACIFIC	95	212	4,284	6,039	1,373	1,432	-	30	-	3	33	20
Wash.	9	5	827	492	94	59	-	-	-	1	1	2
Oreg.	36	29	305	308	98	92	-	-	-	-	-	-
Calif.	42	163	3,100	5,082	1,165	1,262	-	5	-	2	7	14
Alaska	1	8	16	26	10	11	-	25	-	-	25	-
Hawaii	7	7	36	131	6	8	-	-	-	-	-	4
Guam	-	-	-	-	2	3	U	-	U	-	-	-
P.R.	2	-	49	234	319	619	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	6	3	1	53	40	U	-	U	-	-	1

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

*Of 194 cases among children aged <5 years, serotype was reported for 107 and of those, 41 were type b.

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

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending October 17, 1998, and October 11, 1997 (41st Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997
UNITED STATES	2,112	2,616	4	380	498	102	4,537	4,254	-	325	155
NEW ENGLAND	86	167	1	7	8	11	732	765	-	39	1
Maine	5	17	-	-	-	-	5	11	-	-	-
N.H.	4	13	-	-	-	8	87	107	-	-	-
Vt.	5	4	-	-	-	-	65	200	-	-	-
Mass.	40	81	-	4	2	3	528	406	-	9	1
R.I.	7	18	1	1	5	-	9	16	-	1	-
Conn.	25	34	-	2	1	-	38	25	-	29	-
MID. ATLANTIC	189	277	1	21	48	10	444	310	-	130	31
Upstate N.Y.	53	72	1	6	10	10	251	124	-	111	4
N.Y. City	20	46	-	4	3	-	23	59	-	14	27
N.J.	50	57	U	2	7	U	5	13	U	4	-
Pa.	66	102	U	9	28	U	165	114	U	1	-
E.N. CENTRAL	307	400	1	64	61	7	470	452	-	-	6
Ohio	117	140	1	26	24	5	225	128	-	-	-
Ind.	51	45	-	6	8	-	106	45	-	-	-
Ill.	77	122	-	10	9	1	67	64	-	-	2
Mich.	36	57	-	22	16	1	55	50	-	-	-
Wis.	26	36	-	-	4	-	17	165	-	-	4
W.N. CENTRAL	180	184	-	27	14	27	423	331	-	27	-
Minn.	29	29	-	12	5	27	241	210	-	-	-
Iowa	35	40	-	10	7	-	62	33	-	-	-
Mo.	67	80	-	3	-	-	30	57	-	2	-
N. Dak.	5	2	-	2	-	-	2	1	-	-	-
S. Dak.	7	5	-	-	-	-	8	4	-	-	-
Nebr.	9	9	-	-	1	-	14	5	-	-	-
Kans.	28	19	U	-	1	U	66	21	U	25	-
S. ATLANTIC	362	443	1	44	58	5	269	365	-	19	78
Del.	2	5	-	-	-	-	5	1	-	-	-
Md.	25	40	-	-	1	1	49	104	-	1	-
D.C.	1	8	U	-	-	U	1	3	U	-	1
Va.	31	45	-	7	10	1	27	42	-	1	1
W. Va.	13	15	-	-	-	-	1	6	-	-	-
N.C.	49	80	-	10	9	-	89	105	-	13	59
S.C.	49	49	-	6	10	-	25	24	-	-	15
Ga.	79	89	-	1	8	1	22	11	-	-	-
Fla.	113	112	1	20	20	2	50	69	-	4	2
E.S. CENTRAL	202	199	-	13	25	15	104	121	-	3	1
Ky.	26	42	-	-	3	14	43	55	-	-	-
Tenn.	63	66	-	1	4	-	32	33	-	2	-
Ala.	89	67	-	7	8	1	26	23	-	1	1
Miss.	24	24	-	5	10	-	3	10	-	-	-
W.S. CENTRAL	259	250	-	52	70	3	305	211	-	88	4
Ark.	27	30	-	7	1	2	64	25	-	-	-
La.	55	47	-	9	12	1	7	18	-	-	-
Okla.	36	34	-	-	-	-	28	31	-	-	-
Tex.	141	139	-	36	57	-	206	137	-	88	4
MOUNTAIN	120	151	-	32	54	18	836	953	-	5	7
Mont.	4	8	-	-	-	-	9	15	-	-	-
Idaho	9	10	-	4	3	5	239	487	-	-	2
Wyo.	5	2	-	1	1	-	8	7	-	-	-
Colo.	25	41	-	7	3	7	167	288	-	-	-
N. Mex.	25	24	N	N	N	4	86	88	-	1	-
Ariz.	35	39	-	5	32	-	165	33	-	1	5
Utah	11	12	-	5	8	2	128	16	-	2	-
Nev.	6	15	-	10	7	-	34	19	-	1	-
PACIFIC	407	545	-	120	160	6	954	746	-	14	27
Wash.	57	71	-	8	14	4	266	312	-	9	5
Oreg.	73	102	N	N	N	2	91	39	-	-	-
Calif.	269	363	-	88	115	-	574	361	-	3	14
Alaska	3	2	-	2	8	-	14	16	-	-	-
Hawaii	5	7	-	22	23	-	9	18	-	2	8
Guam	1	1	U	2	1	U	-	-	U	-	-
P.R.	6	8	-	1	7	-	3	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	2	4	U	1	-	U	-	-

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

TABLE IV. Deaths in 122 U.S. cities,* week ending October 17, 1998 (41st Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	524	382	88	38	5	11	45
Boston, Mass.	131	90	24	11	2	4	16
Bridgeport, Conn.	27	19	3	4	-	1	-
Cambridge, Mass.	13	12	1	-	-	-	3
Fall River, Mass.	26	20	6	-	-	-	-
Hartford, Conn.	49	37	8	4	-	-	3
Lowell, Mass.	20	14	5	-	-	1	2
Lynn, Mass.	12	7	2	2	-	1	2
New Bedford, Mass.	22	21	-	1	-	-	-
New Haven, Conn.	31	18	9	3	1	-	2
Providence, R.I.	63	49	7	3	2	2	4
Somerville, Mass.	8	6	-	2	-	-	-
Springfield, Mass.	26	16	7	2	-	1	3
Waterbury, Conn.	24	21	3	-	-	-	2
Worcester, Mass.	72	52	13	6	-	1	8
MID. ATLANTIC	2,140	1,557	366	152	33	31	137
Albany, N.Y.	51	35	13	2	-	1	1
Allentown, Pa.	U	U	U	U	U	U	U
Buffalo, N.Y.	89	72	11	5	-	-	9
Camden, N.J.	39	27	4	6	2	-	3
Elizabeth, N.J.	12	11	1	-	-	-	-
Erie, Pa.	33	26	5	2	-	-	4
Jersey City, N.J.	34	25	6	1	1	1	-
New York City, N.Y.	1,123	796	209	88	11	19	56
Newark, N.J.	U	U	U	U	U	U	U
Paterson, N.J.	24	21	1	1	1	-	-
Philadelphia, Pa.	299	191	61	30	11	6	24
Pittsburgh, Pa.§	58	47	9	1	-	1	10
Reading, Pa.	22	20	2	-	-	-	1
Rochester, N.Y.	139	108	16	7	5	3	8
Schenectady, N.Y.	29	26	3	-	-	-	3
Scranton, Pa.	32	28	4	-	-	-	4
Syracuse, N.Y.	101	84	13	4	-	-	12
Trenton, N.J.	33	23	8	2	-	-	1
Utica, N.Y.	22	17	-	3	2	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,940	1,292	387	151	60	48	118
Akron, Ohio	37	31	1	2	1	2	-
Canton, Ohio	34	27	5	2	-	-	2
Chicago, Ill.	378	228	79	40	17	12	32
Cincinnati, Ohio	90	57	20	8	4	1	11
Cleveland, Ohio	121	80	26	7	4	4	3
Columbus, Ohio	197	141	37	8	3	8	13
Dayton, Ohio	108	78	20	5	5	-	7
Detroit, Mich.	230	124	63	31	7	5	7
Evansville, Ind.	40	29	8	1	1	1	1
Fort Wayne, Ind.	75	50	16	7	-	2	2
Gary, Ind.	12	3	3	3	2	1	-
Grand Rapids, Mich.	51	36	9	3	2	1	4
Indianapolis, Ind.	195	135	39	13	5	3	14
Lansing, Mich.	35	26	5	3	1	-	3
Milwaukee, Wis.	124	91	21	8	2	2	5
Peoria, Ill.	47	33	10	1	2	1	1
Rockford, Ill.	48	30	7	3	4	4	5
South Bend, Ind.	52	45	6	1	-	-	3
Toledo, Ohio	66	48	12	5	-	1	5
Youngstown, Ohio	U	U	U	U	U	U	U
W.N. CENTRAL	711	501	111	52	27	15	32
Des Moines, Iowa	48	36	7	-	3	2	4
Duluth, Minn.	21	15	4	1	-	1	2
Kansas City, Kans.	33	18	4	6	4	1	-
Kansas City, Mo.	84	54	12	9	3	1	4
Lincoln, Nebr.	32	26	3	3	-	-	-
Minneapolis, Minn.	151	118	18	9	3	3	7
Omaha, Nebr.	79	56	16	3	1	3	7
St. Louis, Mo.	111	66	25	11	8	1	-
St. Paul, Minn.	77	60	11	5	-	1	7
Wichita, Kans.	75	52	11	5	5	2	1
S. ATLANTIC	1,023	660	210	101	32	19	71
Atlanta, Ga.	128	70	34	19	4	1	2
Baltimore, Md.	111	78	17	11	4	1	10
Charlotte, N.C.	109	71	25	6	6	1	18
Jacksonville, Fla.	129	79	25	17	5	3	4
Miami, Fla.	107	67	27	10	3	-	1
Norfolk, Va.	40	26	7	5	-	2	1
Richmond, Va.	45	30	7	5	1	2	1
Savannah, Ga.	35	29	4	-	-	2	5
St. Petersburg, Fla.	34	28	4	2	-	-	5
Tampa, Fla.	173	124	31	12	4	2	20
Washington, D.C.	102	52	25	14	5	5	4
Wilmington, Del.	10	6	4	-	-	-	-
E.S. CENTRAL	862	548	180	76	26	30	67
Birmingham, Ala.	141	107	25	5	-	2	10
Chattanooga, Tenn.	67	45	15	6	-	1	9
Knoxville, Tenn.	86	52	24	2	3	5	8
Lexington, Ky.	66	47	9	5	3	2	5
Memphis, Tenn.	227	147	51	17	3	9	25
Mobile, Ala.	108	75	16	7	4	6	1
Montgomery, Ala.	48	34	9	3	1	1	8
Nashville, Tenn.	119	41	31	31	12	4	1
W.S. CENTRAL	1,344	863	296	102	40	43	68
Austin, Tex.	60	48	6	3	2	1	2
Baton Rouge, La.	38	29	6	2	-	1	3
Corpus Christi, Tex.	37	28	5	2	-	2	1
Dallas, Tex.	179	114	39	12	7	7	4
El Paso, Tex.	90	57	18	7	5	3	3
Ft. Worth, Tex.	112	61	26	7	5	13	6
Houston, Tex.	331	197	95	26	9	4	25
Little Rock, Ark.	65	41	18	5	-	1	1
New Orleans, La.	118	73	23	15	5	2	-
San Antonio, Tex.	193	128	43	14	4	4	11
Shreveport, La.	7	2	3	2	-	-	1
Tulsa, Okla.	114	85	14	7	3	5	11
MOUNTAIN	881	598	176	68	21	18	83
Albuquerque, N.M.	88	59	21	7	1	-	3
Boise, Idaho	32	21	7	4	-	-	3
Colo. Springs, Colo.	58	42	9	5	-	2	9
Denver, Colo.	92	61	18	10	-	3	4
Las Vegas, Nev.	179	123	46	2	4	4	20
Ogden, Utah	24	21	2	-	1	-	2
Phoenix, Ariz.	170	99	36	20	7	8	18
Pueblo, Colo.	32	27	3	2	-	-	2
Salt Lake City, Utah	104	74	17	7	6	-	15
Tucson, Ariz.	102	71	17	11	2	1	7
PACIFIC	1,658	1,160	287	131	37	43	145
Berkeley, Calif.	U	U	U	U	U	U	U
Fresno, Calif.	79	52	19	4	4	-	8
Glendale, Calif.	13	10	2	-	1	-	1
Honolulu, Hawaii	82	56	12	8	1	5	4
Long Beach, Calif.	85	57	18	8	2	-	16
Los Angeles, Calif.	357	246	63	31	9	8	17
Pasadena, Calif.	31	25	2	-	1	3	2
Portland, Oreg.	107	69	23	13	1	1	10
Sacramento, Calif.	167	109	37	12	4	5	24
San Diego, Calif.	155	112	19	13	4	7	16
San Francisco, Calif.	105	79	18	7	1	-	16
San Jose, Calif.	174	126	24	14	4	6	15
Santa Cruz, Calif.	33	25	4	3	1	-	7
Seattle, Wash.	116	81	23	8	2	2	3
Spokane, Wash.	55	42	8	1	1	3	2
Tacoma, Wash.	99	71	15	9	1	3	4
TOTAL	11,083¶	7,561	2,101	871	281	258	766

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 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 this Pennsylvania city, 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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