CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

March 21, 1997 / Vol. 46 / No. 11

MMWR™
MORBIDITY AND MORTALITY WEEKLY REPORT

Salmonella Serotype Montevideo Infections Associated with Chicks — Idaho, Washington, and Oregon, Spring 1995 and 1996

During 1995 and 1996, public health laboratories in Idaho, Washington, and Oregon identified clusters of infections with *Salmonella* serotype Montevideo. Epidemiologic investigations, including enhanced surveillance, of these clusters indicated association with exposure to chicks. This report summarizes the findings of these investigations, which suggest that handling chicks is a health risk, especially for children; consequently, thorough handwashing is recommended after handling of chicks.

Idaho and Washington

During April 1–May 31, 1995, the public health laboratories of the Idaho Department of Health and Welfare (IDHW) and the Washington Department of Health (WDH) identified three and nine *S.* Montevideo isolates, respectively, compared with annual averages of <1 and 20 during 1984–1994. In April and May 1996, a total of 11 *S.* Montevideo isolates were reported in Washington. For this investigation, a case was defined as culture-confirmed *S.* Montevideo infection in an Idaho or Washington resident with onset of illness during April 1–May 31 in 1995 or 1996; illness in all 23 persons met the case definition. Of the 23 case-patients, 12 (52%) were aged ≤2 years; of these, five (42%) were aged ≤6 months. An isolate obtained from a child aged 14 months was cultured from blood, indicating invasive disease. Three (13%) case-patients were hospitalized.

To identify exposures associated with illness, IDHW and WDH conducted a case-control study in 1995 and 1996. Twenty-two of the 23 persons with illness meeting the case definition were included in the study. Two controls (i.e., persons reporting no diarrheal illness during the referent period) were matched to each case-patient by age and neighborhood. Of 22 case-patients, 17 (77%) had exposure to chicks during the week before illness onset, compared with four (9%) of 44 controls (matched odds ratio=29.3; 95% confidence interval [CI]=4.6–1243.2).

The chicks associated with the 17 case-patients who reported such exposure were purchased in at least four different counties in 1995 and at least six different counties in 1996. No common hatchery, place of purchase, or feed sources were identified. Fecal samples were obtained from two chicks associated with two geographically separated case-patients; *S.* Montevideo was isolated from each.

Salmonella *Montevideo Infections — Continued*

Isolates from the seven Washington patients who had chick exposure in 1995 and from the seven Washington patients who had chick exposure in 1996 and two chicks were subtyped by pulsed-field gel electrophoresis (PFGE). The patterns differed in 1995 and 1996. However, for the 1995 isolates, the patterns from five isolates were indistinguishable, and for the 1996 isolates, the patterns from five of the human isolates and the two chick isolates were indistinguishable.

Oregon

During March–June 1996, the Oregon State Public Health Laboratory identified 16 cases of *S.* Montevideo, compared with an annual average of nine cases during 1984–1995. For this investigation, a case was defined as culture-confirmed *S.* Montevideo infection in an Oregon resident with illness onset during April 1–June 30. Illness in all 16 persons met the case definition. The median age of case-patients was 32 years (range: 5 months–81 years); three (19%) were aged ≤2 years; of these, two (67%) were aged ≤6 months. Two (13%) case-patients were hospitalized.

To identify exposures associated with illness, the State Health Division, Oregon Department of Human Resources, began a case-control study by reviewing salmonellosis case-report forms. Eleven of the 16 case-patients were included in the study. Controls were selected from among culture- confirmed cases of *Salmonella* infection other than *S.* Montevideo identified during the same period from counties reporting S. Montevideo cases. Nineteen controls were selected with a median age of 22 years (range: 9 months–80 years). Seven (64%) of 11 persons with *S.* Montevideo infection compared with one (5%) of 19 persons with other *Salmonella* infections had handled live poultry (chicks, hens, or roosters) during the 5 days before illness onset (odds ratio=31.5; 95% CI=2.5–1494.5). Fecal samples were obtained from five poultry, including two chicks, associated with two case-patients; *S.* Montevideo was isolated from the two chicks obtained from one of the case-patients. No common hatchery, place of purchase, or feed sources were identified among poultry associated with different case-patients.

S. Montevideo isolates were available from five of the seven patients who reported handling live poultry. Among these five isolates, two PFGE patterns were identified. The pattern for four of these isolates and the two chick isolates were indistinguishable; this pattern also was indistinguishable from the pattern identified in the five human and two chick isolates in Washington in 1996. The two culture-positive chicks in Oregon had been purchased from the same hatchery as one of the culture-positive chicks in Washington.

Reported by: D Blythe, MD, M Goldoft, MD, J Lewis, P Stehr-Green, DrPH, State Epidemiologist, Washington Dept of Health. R Chehey, J Greenblatt, MD, State Epidemiologist, Idaho Dept of Health and Welfare. PR Cieslak, MD, KR Stefonek, MPH, FC Hoesly, MD, D Fleming, MD, State Epidemiologist, State Health Div, Oregon Dept of Human Resources. Foodborne and Diarrheal Diseases Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases; and Div of Applied Public Health Training (proposed), Epidemiology Program Office, CDC.

Editorial Note: *Salmonella* infections occur in an estimated 2–4 million persons each year in the United States; of these, approximately 40,000 are culture-confirmed and reported to CDC by state health departments (*1*). Most human *Salmonella* infections are foodborne, but when contact with pets has been implicated, reptiles have been a common source (*2,3*). Molecular subtyping techniques (e.g., PFGE) are valuable tools

Salmonella *Montevideo Infections — Continued*

in epidemiologic investigations because they can link geographically dispersed cases and small clusters of cases to a common source.

The proportion of all salmonellosis cases associated with exposure to chicks and ducklings is unknown; however, previous reports document transmission of *Salmonella* from these small fowl to humans (*4–7*). Many of these outbreaks have occurred during the spring, particularly around Easter. Children may be at greater risk for salmonellosis from these pet or farmyard fowl because of more frequent receipt of fowl as gifts, less frequent handwashing after handling, and more frequent hand-to-mouth contact. In addition, infants with salmonellosis may be at greater risk for developing invasive disease (*8*).

Previous reports of chick- and duckling-associated salmonellosis have resulted in statewide legislation restricting the sale of these baby fowl as pets, such as in Maryland in 1967 (*9*). However, these regulations are difficult to enforce and the effectiveness of such legislation is unknown. Interstate transport and sale of pet baby turtles were banned in 1975 by the Food and Drug Administration to prevent turtle-associated salmonellosis (*10*). The likelihood of transmission of *Salmonella* from pet or farmyard chicks and ducklings can be reduced by avoiding contact with feces from these animals and carefully washing hands with soap and water after handling either chicks, ducklings, or anything that has had contact with these fowl. In addition, persons who, if infected with *Salmonella*, may be at increased risk for illness (e.g., infants, immunocompromised persons, or the elderly) should consider limiting their exposure to these fowl. Chicks and ducklings may not be appropriate pets for children. During investigations of *Salmonella* infections, especially during the spring and Easter seasons, health-care workers and public health personnel should consider contact with chicks and ducklings as a potential risk factor for salmonellosis.

References

1. Tauxe RV. Salmonellosis. In: Kelley WN, ed. Textbook of internal medicine. 3rd ed. Philadelphia, Pennsylvania: Lippincott-Raven, 1997:1639–42.
2. Fonseca RJ, Dubey LM. *Salmonella* Montevideo sepsis from a pet snake [Letter]. Pediatr Infect Dis J 1994;13:550.
3. CDC. Reptile-associated salmonellosis—selected states, 1994–1995. MMWR 1995;44:347–50.
4. CDC. *Salmonella hadar* associated with pet ducklings—Connecticut, Maryland, and Pennsylvania, 1991. MMWR 1992;41:185–7.
5. Anderson AS, Bauer H, Nelson CB. Salmonellosis due to *Salmonella typhimurium* with Easter chicks as likely source. JAMA 1955;158:1153–5.
6. Coohon DB. Infant diarrhea presumably acquired from Easter chicks shedding *Salmonella chester*. In: National Communicable Disease Center. *Salmonella* surveillance, May 1963. Atlanta, Georgia: US Department of Health, Education, and Welfare, Public Health Service, 1963:22–3; report no. 14.
7. Dougherty WJ. Salmonellosis acquired from an Easter pet duckling. In: National Communicable Disease Center. *Salmonella* surveillance, June 1963. Atlanta, Georgia: US Department of Health, Education, and Welfare, Public Health Service, 1963:4; report no. 15.
8. Miller SI, Hohmann EL, Pegues DA. *Salmonella* (including S*almonella typhi*). In: Mandell GL, Bennett JE, Dolin R, eds. Principles and practice of infectious diseases. 4th ed. New York: Churchill Livingstone, 1995:2013–33.
9. Crawford KL. Legislation concerning the sale of live baby fowl as pets. In: National Communicable Disease Center. *Salmonella* surveillance, April 1967. Atlanta, Georgia: US Department of Health, Education, and Welfare, Public Health Service, 1967:7; report no. 61.
10. Cohen ML, Potter M, Pollard R, Feldman RA. Turtle-associated salmonellosis in the United States: effect of public health action, 1970 to 1976. JAMA 1980;243:1247–9.

Postmarketing Surveillance for Angiotensin-Converting Enzyme Inhibitor Use During the First Trimester of Pregnancy — United States, Canada, and Israel, 1987–1995

Angiotensin-converting enzyme inhibitors (ACEIs) are effective antihypertensive drugs, but use of ACEIs during the second and third trimesters of pregnancy has been associated with a pattern of defects known as ACEI fetopathy. The predominant feature of the fetopathy is renal tubular dysplasia. Other associated conditions include hypocalvaria, intrauterine growth retardation (IUGR), and patent ductus arteriosus (PDA). These features may be related to fetal hypotension secondary to ACEI-induced decreases in fetal angiotensin or increased bradykinin (*1,2*). Although no adverse fetal effects have been linked to first trimester use of ACEIs, there has been no systematic evaluation of births to women with such exposures. To determine whether features of ACEI fetopathy occurred after first trimester exposure, in 1992 the Organization of Teratology Information Services (OTIS) in North America initiated the ACEI Registry; two members of the European Network of Teratology Information Services agreed to participate. This report presents findings from the ACEI Registry, which indicate that the infants of 66 women who self-reported first trimester only exposure to ACEI showed no evidence of renal tubular dysplasia.

Teratology information services (TISs) are used by pregnant women or physicians to inquire about potentially teratogenic effects of prenatal exposures. The ACEI Registry included women who directly or indirectly through physicians contacted one of seven TISs during their pregnancy about first trimester exposure to an ACEI. These women conceived during 1986–1994. All participating TISs used a standard form to report exposure details, delivery outcomes, and specific fetal or infant features associated with ACEI fetopathy. Renal function, growth retardation, and skull ossification defects were assessed.

Of 79 women enrolled, 66 (84%) had ACEI exposure limited to the first trimester of pregnancy (≤14 weeks' gestation, as measured since the time of their last menstrual periods). These women had 48 live births from 1987 through 1995 (Table 1). The rate of spontaneous abortion among these women was 23%.

TABLE 1. Pregnancy outcome based on timing of exposure to angiotensin-converting enzyme inhibitors (ACEIs), by week of last exposure* — United States, Canada, and Israel, 1987–1995

Pregnancy outcome	Week of last exposure ≤14	Week of last exposure >14	Total
Live-born infants	48†	13	**61**
Major malformations	*1§*	*1¶*	***2***
Spontaneous abortions	15	0	**15**
Induced abortions	5	0	**5**
Total (mothers)	**66**	**13**	**79**

*Based on weeks following the beginning of last menstrual period.
†Includes two sets of twins.
§Patent ductus arteriosus.
¶Renal tubular dysplasia.

Source: ACEI Registry.

Angiotensin-Converting Enzyme Inhibitor — Continued

Among the 48 live births, three cases of IUGR were documented. One infant with IUGR was from twins delivered at 36 weeks' gestation; the other two were full-term. Another child had a PDA that required surgical ligation at age 18 months. That infant was born at 40 weeks' gestation to a woman who discontinued therapy with an ACEI at 7½ weeks' gestation. She also was treated with digoxin throughout her pregnancy and with warfarin sodium for the first 5 weeks followed by heparin throughout the remainder of her pregnancy. There were no children with renal tubular dysplasia who had been exposed to ACEIs exclusively during the first trimester.

Reported by: M Feldkamp, MSPH, Pregnancy RiskLine; Organization of Teratology Information Svcs, Salt Lake City. KL Jones, MD, California Teratogen Information Svc, San Diego. A Ornoy, MD, Israel Teratology Information Svc, Jerusalem. A Pastuszak, MS, Motherisk Program, Toronto. S Rosenwasser, MEd, Massachusetts Teratogen Information Svc, Boston. B Schick, MS, Pregnancy HealthLine, Philadelphia. J Bar, MD, Beilinson Teratology Information Svc, Petah Tiqva, Jerusalem. Birth Defects and Genetic Diseases Br, Div of Birth Defects and Developmental Disabilities, National Center for Environmental Health, CDC.

Editorial Note: ACEIs increased in popularity during the 1980s and have been promoted as first-line therapy for some persons with chronic hypertension and for the prevention of diabetic nephropathy, thus creating the potential for frequent ACEI exposure among women of childbearing age (*1,3*). In 1992, the Food and Drug Administration warned physicians against prescribing ACEIs to women in their second or third trimester of pregnancy. Because only case reports exist for ACEI exposure during pregnancy, the degree of risk for ACEI fetopathy is unknown.

The findings in this report document no evidence of renal tubular dysplasia or hypocalvaria among the 48 infants born to women with exposure to ACEIs ending at ≤14 weeks. However, the number of exposures reported thus far to the registry is too small to determine conclusively that exposure to an ACEI exclusively during the first trimester is not associated with the features of ACEI fetopathy. Whenever possible, pregnant women who are using ACEIs should be changed to another antihypertensive medication to maintain normal blood pressure.

It is unknown whether first trimester exposure to ACEIs was associated with the development of IUGR in the three infants in this study because other known risk factors (i.e., multiple gestation or maternal hypertension) for IUGR were present. In addition, because no controls were included in this study, the rate of IUGR or spontaneous abortion (23%) among infants in the ACEI Registry could not be compared systematically with the rate in an unexposed cohort. Approximately 15% of all recognized pregnancies in the United States end with fetal loss, but the distinctive risk factors of women in the ACEI Registry limit comparisons to the U.S. population (*4*).

In previous reports of seven infants with PDAs who were exposed prenatally to ACEIs during the second and third trimester, a definite cause-and-effect relation was not established (*1*). Based on the possible effect of ACEIs on the fetal bradykinin-prostaglandin system, prenatal exposure to ACEIs might inhibit ductal closure. Although this may explain inhibition of ductal closure in infants whose mothers continue using the drug into the third trimester of pregnancy, it is an unlikely mechanism to explain PDA in the child reported to the ACEI Registry.

Because ascertainment of exposures among pregnant women by TIS is voluntary, data may be affected by selection bias, thus limiting the generalizability of these and other registry data. However, ongoing collection of detailed prospective exposure information combined with collection of clinical outcome data through these services

Angiotensin-Converting Enzyme Inhibitor — Continued

can be an effective method for providing early warning of the potential teratogenic effects of drugs.

Another method of postmarketing surveillance involves using collaborating birth defect registries for case-control studies of associations between specific outcomes and drug exposures (*5*). This approach allows for collection of information about a wider range of exposures. CDC, in collaboration with several state-based birth defects programs, has initiated the Birth Defects Risk Factor Surveillance Program, an ongoing case-control study of a variety of birth defects and exposures. A third approach, established by the International Clearinghouse for Birth Defects Monitoring Systems (*6*), is a retrospective, case-only evaluation of drug exposures and birth defects (*7*).

OTIS member-information services operate in 24 states* and the District of Columbia. Local TIS telephone numbers for reports and consultation about ACEI and other pregnancy exposures are available on the World-Wide Web at http://orpheus.ucsd.edu/ctis/index.html, or by contacting the OTIS Information/Pregnancy RiskLine, telephone (801) 328-2229.

References

1. Barr M Jr. Teratogen update: angiotensin-converting enzyme inhibitors [Review]. Teratology 1994;50:399–409.
2. Shotan A, Widerhorn J, Hurst A, Elkayam U. Risks of angiotensin-converting enzyme inhibition during pregnancy: experimental and clinical evidence, potential mechanisms, and recommendations for use. Am J Med 1994;96:451–6.
3. Bakris GL. Angiotensin-converting enzyme inhibitors and progression of diabetic nephropathy. Ann Intern Med 1993;118:643–4.
4. Ventura SJ, Taffel SM, Mosher WD, Wilson JB, Henshaw S. Trends in pregnancies and pregnancy rates: estimates for the United States, 1980–92. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, National Center for Health Statistics, 1995. (Monthly vital statistics report; vol 43, no. 11, suppl).
5. Källén B, Mastroiacovo P, Lancaster PAL, et al. Oral contraceptives in the etiology of isolated hypospadias. Contraception 1991;44:173–82.
6. Erickson JD. The International Clearinghouse for Birth Defects Monitoring Systems: past, present and future. Int J Risk Safety Med 1991;2:239–48.
7. Robert E, Vollset SE, Botto L, et al. Malformation surveillance and maternal drug exposure: the MADRE project. Int J Risk Safety Med 1994;6:75–118.

*Alabama, Arizona, Arkansas, California, Connecticut, Florida, Georgia, Illinois, Indiana, Kansas, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New York, North Carolina, North Dakota, Pennsylvania, Texas, Utah, Vermont, Washington, and Wisconsin.

Measles — United States, 1996, and the Interruption of Indigenous Transmission

As of December 30, 1996 (week 52), local and state health departments had reported a provisional total of 488 confirmed cases of measles to CDC for 1996, and the Commonwealth of Puerto Rico had reported eight cases. In addition, indigenous transmission of measles in the United States was interrrupted for a prolonged period beginning in late 1996. This report summarizes measles surveillance data for 1996, which indicate a substantial proportion of cases were associated with continued international importations of measles and outbreaks among school-aged children who were not required to receive a second dose of measles-containing vaccine (MCV) to attend school.

Measles — Continued

Case Classification

Of the 488 provisional cases, 355 (73%) were indigenous to the United States, including 332 (68%) cases acquired in the state reporting the case and 23 (5%) cases resulting from spread from another state. International importations accounted for 47 (10%) cases of measles, and an additional 86 (18%) cases were epidemiologically linked to imported cases. Importations originated from or occurred among persons who had traveled in Germany (seven cases); Greece and Japan (five each); Austria, India, and Philippines (three each); China, Italy, and Russia (two each); and England, Kenya, Liberia, Nepal, Somalia, Tahiti, and Turkey (one each). For eight of the imported cases, the exact source was unknown because the patient had traveled in more than one country outside the United States during the exposure period. None of the imported cases were acquired in countries in the Americas.

Age and Vaccination Status

Of the 465 measles patients for whom age was known, 117 (25%) were aged <5 years, including 37 (8%) aged <12 months and 25 (5%) aged 12–15 months. A total of 195 (42%) measles patients were aged 5–19 years, and 153 (33%) were aged ≥20 years.

Vaccination status was reported for 354 patients. Of the 226 (64%) who were not vaccinated, 170 (75%) were eligible to be vaccinated (i.e., aged >12 months and born after 1956). Vaccination status varied by age group: all 32 patients aged <1 year were unvaccinated, compared with 44 (71%) of 62 patients aged 1–4 years, 65 (48%) of 136 patients aged 5–19 years, and 85 (69%) of 124 patients aged ≥20 years. Of the 77 patients for whom dates of vaccination were available, 51 (66%) had received at least one dose of MCV after their first birthday and ≥14 days before rash onset. Five cases of measles were reported among persons who had received two doses of MCV after their first birthday, and one case was reported in a person who had received three doses of MCV.

Outbreaks

Twenty-three outbreaks (i.e., clusters of three or more epidemiologically linked cases) were reported by 15 states, accounting for 76% of all cases. The number of cases associated with outbreaks ranged from three to 121 (median: five cases). Transmission of measles occurred in school settings in seven outbreaks, and these outbreaks accounted for 55% of all cases reported in 1996. In four outbreaks (Alaska, Texas, Utah, and Washington), cases among school-aged children occurred primarily in those who had received only one dose of MCV; in two other outbreaks (Massachusetts and Minnesota), cases occurred among school-aged children who had religious or philosophic exemptions to vaccination. In Hawaii, an outbreak occurred in a college without a prematriculation vaccination requirement.

In outbreaks related to vaccine failure among school-aged children, the age distribution of cases reflected the type of second-dose policy implemented in the state. In Utah, which had the largest outbreak in the country in 1996 (121 cases, including cases resulting from spread to other states), a requirement for a second dose of measles-mumps-rubella vaccine (MMR) at kindergarten entrance has existed since 1992; at the time of the outbreak, children aged 5–9 years should have received a second dose of MMR. In this outbreak, 75 cases occurred among persons aged 10–19 years, and two cases occurred among children aged 5–9 years. Similarly, in Texas

Measles — Continued

and Washington, which both require a second dose of MMR at middle school entry, outbreak-associated cases occurred among either primary school students, or among high school juniors or seniors who entered secondary school before the policy was implemented. In Alaska, which had not implemented a requirement for a second dose of MMR at the time of the outbreak*, the 63 total cases occurred among elementary school students (17 cases), middle school students (17), and high school students (six) (*1*).

The source case for six outbreaks (California, Hawaii, Massachusetts, New York, Pennsylvania, and Washington) was traced to an international importation. Genomic sequences from measles virus isolates from four outbreaks without an identified source case (Alaska, Massachusetts [a different outbreak from the outbreak listed above in Massachusetts], Minnesota, and Utah) were similar to sequences from viruses that were identified as importations from Europe and Southeast Asia, suggesting that an additional 205 (42%) of the 488 provisional cases reported for 1996 were related to international importations.

With the exception of an outbreak of measles in Hawaii (which was linked both by case investigation and molecular epidemiology to international importations of measles virus), indigenous transmission of measles in the United States appears to have been interrupted in late 1996. From October 18, 1996, to February 10, 1997 (16 weeks), only one case of measles (with rash onset on December 16) not linked to an international importation was reported in the United States. An indigenous case with rash onset in February is still under investigation.

Reported by: State and local health depts. Measles Virus Section, Respiratory and Enterovirus Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Child Vaccine Preventable Diseases Br, Epidemiology and Surveillance Div, National Immunization Program, CDC.

Editorial Note: Since the resurgence of measles in the United States during 1989–1991 (when approximately 55,000 cases of measles were reported), the annual numbers of reported cases of measles have steadily declined. However, measles among international travelers and outbreaks in schools continue to occur.

Despite coverage levels with MCV of >95% among schoolchildren, most outbreaks during 1985–1988 occurred in schools among children who had been appropriately vaccinated (*2,3*). This prompted the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics to recommend that all children receive a second dose of MCV (preferably MMR) at either age 4–6 years or 11–12 years (*4*). By 1995, a total of 41 states and the District of Columbia had implemented requirements for a second dose of MMR at either kindergarten or middle school entry (CDC, unpublished data, 1996). In 1996, patterns of outbreaks in schools indicated that gaps in coverage persist and that complete second-dose coverage of all cohorts of school-aged children is necessary to eliminate outbreaks of measles among these children. In addition, further implementation of college prematriculation vaccination requirements for a second dose of MCV should reduce the risk for measles transmission in colleges and universities (*5*).

ACIP guidelines recommend that, during outbreaks in school settings, affected schools initiate a program of revaccination and consider revaccinating children in unaffected schools that may be at risk for transmission of measles (*4*). The findings of

*Alaska's requirement for a second dose of MMR at kindergarten and first-grade entry became effective beginning with the 1996–97 school year.

Measles — Continued

a study of revaccination of schoolchildren during a measles outbreak in Albuquerque (*6*) indicated that no measles cases occurred 28 days after revaccination in schools without measles cases in school districts where cases had been reported. The decision to revaccinate children in unaffected schools is difficult and should be based on the likelihood of spread to such schools and the availablity of personnel to conduct vaccination clinics. In these circumstances, CDC can provide vaccine to state health departments to prevent the spread of outbreaks. The ACIP is revising its guidelines to recommend that all school-aged children receive a second dose of MCV by the year 2001; during the interim, to limit the spread of measles transmission and to prevent future outbreaks, public health officials should consider revaccinating schoolchildren in unaffected schools in counties where measles cases have occurred.

Of the provisional measles cases reported for 1996, 69% had international sources: 133 (27%) cases were identified as international importations or were linked to international importations by routine case investigation, and 205 (42%) cases were linked to international importations by molecular epidemiology. Both surveillance and molecular epidemiologic data indicate that the sources of international importations have been predominantly European or Asian; no known cases of measles have been imported from the Americas in 1996. Recent progress by the Pan American Health Organization (PAHO) toward the goal of eliminating measles from the Western Hemisphere has resulted in decreases in the incidence of measles in the hemisphere and in the numbers of cases imported into the United States from other countries in the Americas (*7,8*). At an international meeting sponsored by PAHO and the World Health Organization in Atlanta in July 1996, participants agreed that global measles eradication is technically feasible with currently available vaccines and that a goal of global eradication should be established (*9*).

The strategy to eliminate indigenous transmission of measles in the United States includes 1) achieving high population immunity among both preschool children (with one dose of MMR) and school-aged children (with two doses of MMR), 2) improving the sensitivity of surveillance for and increasing laboratory confirmation of measles cases, 3) rapidly implementing outbreak-control measures, and 4) supporting international efforts to eliminate measles. In particular, patterns of transmission of measles cases in 1996 highlight the importance of achieving high levels of second-dose coverage in all cohorts of schoolchildren as well as college students and assisting in global efforts to control measles.

References

1. CDC. Measles outbreak among school-aged children—Juneau, Alaska, 1996. MMWR 1996;45: 777–80.
2. Markowitz LE, Preblud SR, Orenstein WA, et al. Patterns of transmission in measles outbreaks in the United States, 1985–1986. N Engl J Med 1989;320:75–81.
3. Hutchins SS, Markowitz LE, Atkinson WL, Swint E, Hadler S. Measles outbreaks in the United States, 1987 through 1990. Pediatr Infect Dis J 1996;15:31–8.
4. CDC. Measles prevention: recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 1989;38(no. S-9).
5. Baughman AL, Williams WW, Atkinson WL, Cook LG, Collins M. The impact of college prematriculation immunization requirements on risk for measles outbreaks. JAMA 1994;272: 1127–32.

Measles — Continued

6. Hutchins SS, Markowitz LE, Mead P, et al. A school-based measles outbreak: the effect of a selective revaccination policy and risk factors for vaccine failure. Am J Epidemiol 1990;132: 157–68.
7. de Quadros CA, Olive JM, Hersh BS, et al. Measles elimination in the Americas: evolving strategies. JAMA 1996;275:224–9.
8. Anonymous. International importations of measles from the Americas into the United States, 1990–1994. EPI Newsletter (February) 1995;17:1–2.
9. Anonymous. Meeting on advances in measles elimination: conclusions and recommendations. Wkly Epidemiol Rec 1996;71:305–9.

Tobacco Tax Initiative — Oregon, 1996

In 1995, tobacco use contributed to the deaths of 6274 persons in Oregon (1995 population: 3,132,000) as reported by physicians on death certificates; annual costs in Oregon for the direct and indirect consequences of tobacco use were approximately $1 billion (State Health Division, Oregon Department of Human Resources, unpublished data, 1997). In response to the health burden associated with tobacco use in Oregon, in late 1995 a statewide coalition of health-care and tobacco-use prevention interests began a petition-driven citizen initiative, "Measure 44," to increase the tax on each pack of cigarettes from 38¢ to 68¢ and the tax on noncigarette tobacco products from 35% to 65% of wholesale price beginning February 1, 1997. This report presents findings of surveys conducted before and after the measure was approved by voters; in both surveys, respondents indicated that support for such an initiative was increased by dedicating a portion of the new revenue to tobacco-use prevention and education and to expanded insurance coverage under the Oregon Health Plan (OHP) for medically underserved persons.

The measure presented to voters on November 5, 1996, authorized 10% of the new tobacco tax revenue to be used to develop and implement statewide tobacco-use prevention and education programs managed by the State Health Division, Oregon Department of Human Resources, and 90% to be used to expand health-care coverage under the OHP. The initiative was approved by 56% to 44%. The coalition of health-care and tobacco-use prevention interests reported spending $650,000 to promote the initiative, compared with $4.8 million spent almost exclusively by the tobacco industry to oppose the initiative (*1*). Voter turnout was 71%, similar to turnouts in previous presidential election years; 97% of those voting cast a vote on this issue.

Pre-Election Survey

From September 18 through October 11, 1994, a population-based, random-digit–dialed telephone survey of persons aged ≥18 years in Oregon was conducted on tobacco excise tax policies (*2*). Respondents were asked about increasing the state tobacco excise tax with the revenue to be used to help pay for 1) a greater share of the OHP, 2) programs to reduce or prevent smoking, 3) other health programs in addition to those aimed at reducing or preventing cigarette smoking, and 4) any government purpose, not just health, health insurance, or smoking prevention. Respondents were asked whether they currently smoke every day or some days and whether they use pipes or cigars, chew tobacco, or use snuff regularly. Persons who currently used any tobacco product were classified as "tobacco users." Of the 1538 telephone numbers in the sample, 813 households were contacted; one person aged ≥18 years was

Tobacco Tax — Continued

randomly selected in each household for interview. A total of 631 sampled telephone numbers were excluded because they were not residences or were not in service; residential status could not be determined for 94. Completed surveys were obtained from 594 (73%) households.

Overall, 68% (95% confidence interval [CI]=±4.0%) of respondents favored an increase in tobacco taxes, including 76% (95% CI=±4.5%) of respondents who reported no current tobacco use and 44% (95% CI=±8.5%) of respondents who reported current tobacco use. However, 89% (95% CI=±2.6%) of respondents favored an increase if the funds were used for the OHP; 67% (95% CI=±4.0%), if the funds were used for tobacco-use prevention; 67%, if the funds were used for other health programs; and 20% (95% CI=±3.5%), if the funds were added to state general funds.

Post-Election Survey

A 1996 post-election survey of Oregon households was conducted by the Program for Governmental Research and Education of Oregon State University to assess reasons respondents voted on items on the ballot, including Measure 44 (*3*). A sample of 1800 addresses were randomly selected from telephone directory listings that included current mailing addresses of all Oregon households with telephones. In the initial mailing, 430 addresses identified as invalid were excluded from the sample. Households that did not reply by mail were contacted by telephone. Completed surveys were obtained from 699 (51%) of 1370 households.

Overall, 61% (95% CI=±3.6%) of respondents reported voting for the measure, and 38% (95% CI=±3.6%) reported voting against it. Reasons cited by voters who supported the initiative were consistent with goals promoted by the coalition supporting the initiative: the primary reason for 66% (95% CI=±4.5%) was "to discourage tobacco consumption," and for 27% (95% CI=±4.2%), "to expand the health plan." Of respondents voting against the initiative, 47% (95% CI=±5.9%) reported that the primary reason was "tobacco users should not be forced to pay a disproportionate share of health costs," and 36% (95% CI=±5.7%) reported that it would "lead to wasteful spending by the government"; both issues were emphasized in the "No on 44" campaign (*3*).

Reported by: W Bjornson, MPH, Oregon SmokeLess States Project, Portland; RC Sahr, PhD, Oregon State Univ, Corvallis; J Moore, PhD, H Balshem, MA, D Fleming, MD, State Epidemiologist, State Health Div, Oregon Dept of Human Resources. R Strouse, PhD, J Hall, MA, Mathematica Policy Research Inc., Princeton, New Jersey. BS Steel, PhD, Washington State Univ at Vancouver. Epidemiology Br, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: The findings in this report suggest that, in Oregon, support for the increase in tobacco excise taxes was increased by explicit dedication of new revenue from the tax for both a new statewide tobacco-use prevention and education program and expanded insurance coverage under the OHP. Oregon is the fourth state since 1988 to pass a citizen initiative to raise tobacco taxes and dedicate a portion of the new tax revenue to prevention and education programs; others were California (in 1988), Massachusetts (1992), and Arizona (1994). Similar initiatives failed in Montana (1990) and Colorado (1992). Michigan passed a citizen initiative to increase the tobacco excise tax from 25¢ to 50¢ in March 1994 as part of a multifaceted ballot initiative to replace property tax funding of schools with other taxes. In 34 other states since 1988, legislatures have increased tobacco excise taxes (e.g., Washington [from 56.5¢ to 81.5¢ in 1994]) (*4*). Data from the surveys described in this report suggest that a desire

Tobacco Tax — Continued

to reduce tobacco use was prevalent among adults before the election and was a primary factor considered by voters. As in other states (e.g., Michigan), the dedication of funds to a public service objective (e.g., expanding the OHP) was viewed positively (*5*).

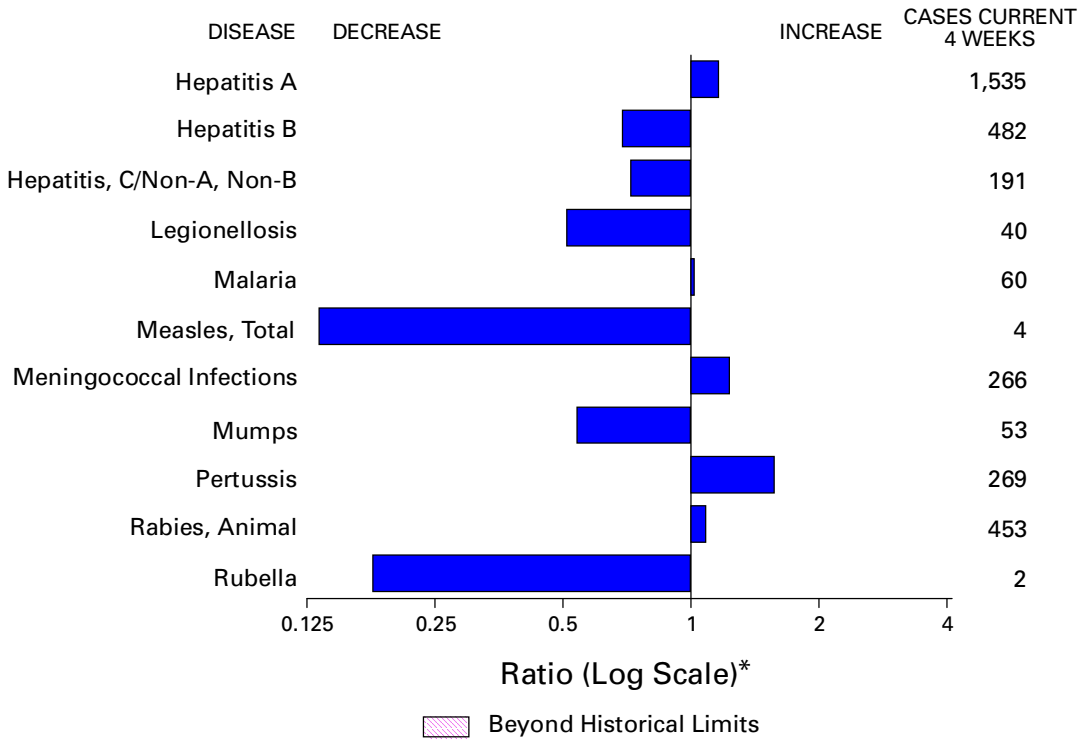
Although increasing excise taxes on cigarettes has been suggested as one of the most cost-effective short-term strategies to reduce tobacco consumption among adults and prevent youth initiation of tobacco use (*6*), a tax increase combined with an antismoking campaign can be more effective in sustaining the reduction in per capita consumption than a tax increase alone (*7*). With the implementation of a statewide program, both California and Massachusetts have sustained greater declines in per capita tobacco use than the rest of the nation; from 1992 through 1996, per capita consumption declined 19.7% in Massachusetts and 15.8% in California but only 6.1% in the remaining 48 states and the District of Columbia combined (*7*). Although youth smoking rates have increased in both states, recent analyses suggest that the rates would have increased more rapidly in the absence of the excise tax increases and tobacco-control programs (*8*).

The State Health Division, with technical assistance from CDC, is developing and implementing a comprehensive tobacco-use prevention and education program incorporating components that have been effective in past research and other statewide demonstration efforts. Based on projections for 1997–1998, the program will receive approximately $17 million per biennium. The funds raised through this tax initiative will be used for 1) active community coalitions coordinated through local health departments; 2) prevention programs targeted toward youths that incorporate comprehensive school-based programs linked to community efforts; 3) public education through paid advertising and promotional activities; 4) cessation services for adults and youths that are integrated into the existing health-care delivery systems; 5) grants for special populations, a quitter's hotline, and innovative programs and training; and 6) an evaluation system to measure program effectiveness.

References

1. Election Division, Oregon Secretary of State. Summary statement of contributions and expenditures. Portland, Oregon: State of Oregon, 1996.
2. Mathematica Policy Research Inc. SmokeLess States Tobacco Control Survey. Portland, Oregon: Tobacco-Free Coalition of Oregon, 1994.
3. Sahr RC, Steel BS, Sellers SW. Results of the 1996–97 Oregon Fiscal Choices Survey. Corvallis, Oregon: Program for Governmental Research and Education, Oregon State University, April 1997 (in press).
4. The Tobacco Institute. The tax burden on tobacco. Vol 30. Washington, DC: The Tobacco Institute, 1995.
5. Public Opinion Research Institute. Cigarette taxes and the 1992 state elections: the public voices its desire for new faces in the legislature and its support for an increase in the cigarette tax. Lansing, Michigan: Public Sector Consultants/American Lung Association–Michigan, 1992.
6. National Cancer Institute. The impact of cigarette excise taxes on smoking among children and adults. Washington, DC: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute, 1993.
7. CDC. Cigarette smoking before and after an excise tax increase and an antismoking campaign—Massachusetts, 1990–1996. MMWR 1996;45:966–70.
8. Chaloupka FJ, Grossman M. Price, tobacco control policies, and youth smoking. Cambridge, Massachusetts: National Bureau of Economic Research, September 1996 (National Bureau of Economic Research Working Paper Series, no. 5740).

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending March 15, 1997, 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 March 15, 1997 (11th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	-
Brucellosis	5	Poliomyelitis, paralytic	-
Cholera	0	Psittacosis	7
Congenital rubella syndrome	1	Rabies, human	1
Cryptosporidiosis*	204	Rocky Mountain spotted fever (RMSF)	16
Diphtheria	-	Streptococcal disease, invasive Group A	150
Encephalitis: California*	1	Streptococcal toxic-shock syndrome*	5
eastern equine*	-	Syphilis, congenital¶	-
St. Louis*	-	Tetanus	6
western equine*	-	Toxic-shock syndrome	19
Hansen Disease	22	Trichinosis	2
Hantavirus pulmonary syndrome*†	1	Typhoid fever	56
Hemolytic uremic syndrome, post-diarrheal*	9	Yellow fever	-
HIV infection, pediatric*§	19		

-: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 January 28, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending March 15, 1997, and March 16, 1996 (11th Week)

Reporting Area	AIDS*		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
UNITED STATES	5,109	11,907	61,612	78,876	194	73	42,814	65,491	587	585
NEW ENGLAND	134	613	3,054	3,899	16	7	1,207	1,613	2	15
Maine	13	8	49	-	1	-	3	10	-	-
N.H.	1	14	102	119	-	-	33	26	1	2
Vt.	7	5	80	104	1	1	13	16	-	7
Mass.	62	386	1,536	1,373	12	6	500	529	1	5
R.I.	19	17	443	491	1	-	118	127	-	1
Conn.	32	183	844	1,812	1	-	540	905	-	-
MID. ATLANTIC	1,921	3,033	4,064	9,948	12	3	2,594	5,902	51	40
Upstate N.Y.	113	390	N	N	6	3	319	5	35	35
N.Y. City	1,039	1,628	-	4,121	4	-	-	2,608	-	1
N.J.	468	646	945	1,558	2	-	687	959	-	-
Pa.	301	369	3,119	4,269	N	-	1,588	2,330	16	4
E.N. CENTRAL	242	906	11,475	19,311	29	11	7,584	12,893	122	92
Ohio	57	249	2,697	4,474	14	7	1,869	3,467	5	2
Ind.	25	90	1,674	1,790	6	-	1,201	1,404	1	2
Ill.	115	321	2,370	5,642	-	-	1,243	3,649	-	19
Mich.	29	191	3,414	4,994	9	2	2,627	3,295	116	69
Wis.	16	55	1,320	2,411	N	2	644	1,078	-	-
W.N. CENTRAL	127	248	4,230	6,930	29	15	1,963	2,808	28	15
Minn.	17	57	-	999	16	10	U	-	-	-
Iowa	38	22	1,040	549	7	2	263	183	13	3
Mo.	54	90	2,036	3,356	1	-	1,316	1,943	3	9
N. Dak.	2	-	81	219	3	2	5	8	2	-
S. Dak.	-	3	216	219	-	-	28	34	-	-
Nebr.	15	22	212	571	1	-	79	107	-	2
Kans.	1	54	645	1,017	1	1	272	533	10	1
S. ATLANTIC	1,239	2,883	15,159	10,927	33	5	17,177	23,535	51	28
Del.	20	72	-	-	1	1	228	331	-	-
Md.	166	196	1,318	1,149	2	1	2,686	2,902	4	-
D.C.	55	127	N	N	-	-	938	966	-	-
Va.	130	127	2,456	2,288	N	-	1,988	2,279	4	1
W. Va.	14	19	-	-	N	-	114	99	1	4
N.C.	59	35	3,656	U	4	3	3,255	4,382	16	8
S.C.	104	91	2,142	U	-	-	2,504	2,619	12	4
Ga.	183	447	1,455	2,597	13	-	2,348	5,811	U	-
Fla.	508	1,769	4,132	4,893	13	-	3,116	4,146	14	11
E.S. CENTRAL	134	391	5,316	5,814	17	4	5,231	6,447	65	109
Ky.	23	67	1,365	1,493	5	-	835	884	3	5
Tenn.	59	167	2,434	2,512	10	4	2,164	2,266	29	103
Ala.	37	91	1,250	1,748	-	-	1,907	2,846	4	1
Miss.	15	66	267	61	2	-	325	451	29	-
W.S. CENTRAL	420	1,037	2,844	4,323	3	1	2,711	5,459	48	54
Ark.	18	69	228	313	2	-	440	906	2	1
La.	64	289	1,326	-	1	1	1,326	1,739	33	13
Okla.	32	26	1,290	1,577	-	-	945	986	-	25
Tex.	306	653	-	2,433	-	-	-	1,828	13	15
MOUNTAIN	122	325	4,008	2,593	22	16	1,457	1,739	70	147
Mont.	7	3	137	-	-	-	10	4	3	6
Idaho	2	4	318	314	1	-	23	16	13	34
Wyo.	1	-	100	149	-	-	12	9	23	41
Colo.	24	86	101	6	13	7	359	423	13	13
N. Mex.	5	20	877	808	4	1	317	198	10	24
Ariz.	30	94	1,704	375	N	6	564	866	5	19
Utah	10	39	292	338	1	-	36	57	1	6
Nev.	43	79	479	603	3	2	136	166	2	4
PACIFIC	770	2,471	11,462	15,131	33	9	2,890	5,095	150	85
Wash.	45	140	1,907	2,112	4	-	459	539	5	17
Oreg.	30	133	530	1,112	8	7	77	78	3	2
Calif.	682	2,173	8,460	11,415	18	2	2,156	4,277	106	32
Alaska	10	3	269	89	3	-	115	91	-	2
Hawaii	3	22	296	403	N	-	83	110	36	32
Guam	-	3	-	81	N	-	-	20	-	-
P.R.	144	416	N	N	4	U	175	28	8	12
V.I.	4	1	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	-	-	N	N	N	U	7	11	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 January 28, 1997.

†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 March 15, 1997, and March 16, 1996 (11th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	170	140	445	868	231	200	1,422	2,574	2,278	2,851	1,120
NEW ENGLAND	13	4	41	65	5	4	32	41	68	77	174
Maine	1	1	-	-	-	1	-	-	-	3	36
N.H.	3	-	2	1	-	-	-	1	2	2	6
Vt.	2	-	1	-	-	1	-	-	-	-	25
Mass.	4	1	23	7	4	2	15	17	36	28	37
R.I.	-	2	15	18	1	-	-	-	5	11	1
Conn.	3	N	-	39	-	-	17	23	25	33	69
MID. ATLANTIC	29	33	337	734	52	56	22	79	435	440	241
Upstate N.Y.	7	7	25	190	9	11	4	7	43	51	175
N.Y. City	-	1	2	209	27	26	-	31	229	217	-
N.J.	3	5	66	66	13	16	2	18	94	102	17
Pa.	19	20	244	269	3	3	16	23	69	70	49
E.N. CENTRAL	67	53	8	4	11	24	145	415	348	400	2
Ohio	39	18	7	2	1	4	53	166	87	65	1
Ind.	7	12	1	2	1	1	31	57	21	31	1
Ill.	-	5	-	-	-	8	16	103	187	255	-
Mich.	21	14	-	-	9	7	22	38	33	39	-
Wis.	-	4	U	U	-	4	23	51	20	10	-
W.N. CENTRAL	10	8	1	13	4	3	34	126	76	81	72
Minn.	-	-	-	-	1	-	-	33	24	22	10
Iowa	-	-	-	1	1	1	10	4	10	10	37
Mo.	4	3	-	4	2	1	14	79	30	31	7
N. Dak.	1	-	-	-	-	-	-	-	2	1	9
S. Dak.	1	1	-	-	-	-	-	-	2	6	3
Nebr.	4	4	1	-	-	-	-	5	-	-	-
Kans.	-	-	-	8	-	1	10	5	8	11	6
S. ATLANTIC	23	12	35	34	65	31	659	825	376	428	520
Del.	2	1	-	6	2	2	4	10	-	9	2
Md.	13	2	23	19	18	11	142	122	33	48	99
D.C.	1	1	4	-	4	1	30	34	16	14	1
Va.	1	2	-	-	13	5	61	100	16	25	92
W. Va.	-	1	-	2	-	-	-	1	9	17	12
N.C.	3	3	2	4	3	4	166	215	54	40	174
S.C.	1	1	1	1	3	1	96	95	58	61	21
Ga.	-	-	1	-	9	2	107	189	76	101	57
Fla.	2	1	4	2	13	5	53	59	114	113	62
E.S. CENTRAL	6	10	14	6	6	3	322	651	148	253	54
Ky.	-	3	1	3	1	1	30	37	26	41	8
Tenn.	2	4	2	3	1	1	171	201	9	75	37
Ala.	1	-	-	-	1	1	85	136	79	86	9
Miss.	3	3	11	-	3	-	36	277	34	51	-
W.S. CENTRAL	-	1	1	1	3	8	151	289	36	193	22
Ark.	-	-	-	1	1	-	16	71	23	20	6
La.	-	-	-	-	2	-	106	115	-	-	-
Okla.	-	1	-	-	-	-	29	29	13	30	16
Tex.	-	-	1	-	-	8	-	74	-	143	-
MOUNTAIN	13	8	-	-	14	15	29	31	81	101	5
Mont.	-	-	-	-	1	-	-	-	2	-	1
Idaho	-	-	-	-	-	-	-	1	-	2	-
Wyo.	1	-	-	-	1	2	-	1	1	-	-
Colo.	4	4	-	-	7	8	-	11	18	24	-
N. Mex.	-	-	-	-	2	1	-	-	4	7	1
Ariz.	3	1	-	-	-	1	24	15	37	53	3
Utah	4	-	-	-	-	2	1	-	1	-	-
Nev.	1	3	-	-	3	1	4	3	18	15	-
PACIFIC	9	11	8	11	71	56	28	117	710	878	30
Wash.	1	-	-	-	-	-	3	-	38	44	-
Oreg.	-	-	2	4	5	4	1	1	24	38	1
Calif.	7	11	6	6	66	49	23	115	587	747	27
Alaska	-	-	-	-	-	-	-	-	20	17	2
Hawaii	1	-	-	1	-	3	1	1	41	32	-
Guam	-	-	-	-	-	-	-	2	-	26	-
P.R.	-	-	-	-	1	-	58	28	-	-	10
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	1	1	-	-	-

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

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending March 15, 1997, and March 16, 1996 (11th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	255	258	4,831	5,494	1,410	1,730	2	7	-	4	11	46
NEW ENGLAND	8	7	81	54	22	32	-	-	-	-	-	6
Maine	2	-	3	8	3	2	-	-	-	-	-	-
N.H.	1	5	6	3	2	1	-	-	-	-	-	-
Vt.	-	-	4	-	1	2	-	-	-	-	-	1
Mass.	4	2	31	22	12	5	-	-	-	-	-	4
R.I.	1	-	4	2	2	1	-	-	-	-	-	-
Conn.	-	-	33	19	2	21	-	-	-	-	-	1
MID. ATLANTIC	27	36	283	388	205	280	-	1	-	1	2	3
Upstate N.Y.	1	3	26	52	33	54	-	1	-	1	2	1
N.Y. City	11	4	116	195	72	133	-	-	-	-	-	2
N.J.	11	15	62	78	51	52	-	-	-	-	-	-
Pa.	4	14	79	63	49	41	-	-	-	-	-	-
E.N. CENTRAL	28	50	349	518	151	220	2	3	-	1	4	-
Ohio	20	31	106	212	20	25	-	-	-	-	-	-
Ind.	4	1	53	83	10	21	-	-	-	-	-	-
Ill.	-	14	-	120	-	58	2	3	-	-	3	-
Mich.	4	2	160	62	119	89	-	-	-	1	1	-
Wis.	-	2	30	41	2	27	-	-	-	-	-	-
W.N. CENTRAL	7	8	344	438	75	96	-	-	-	-	-	-
Minn.	2	1	6	11	2	2	-	-	-	-	-	-
Iowa	2	3	51	116	32	10	-	-	-	-	-	-
Mo.	1	4	192	211	28	63	-	-	-	-	-	-
N. Dak.	-	-	4	5	-	-	-	-	-	-	-	-
S. Dak.	1	-	5	24	-	-	-	-	-	-	-	-
Nebr.	-	-	28	41	3	7	-	-	-	-	-	-
Kans.	1	-	58	30	10	14	-	-	-	-	-	-
S. ATLANTIC	67	40	339	173	190	256	-	-	-	-	-	2
Del.	-	-	7	3	1	-	-	-	-	-	-	1
Md.	21	14	86	41	37	67	-	-	-	-	-	-
D.C.	2	-	10	6	13	3	-	-	-	-	-	-
Va.	2	2	39	29	16	29	-	-	-	-	-	-
W. Va.	1	-	3	5	4	8	-	-	-	-	-	-
N.C.	7	6	51	25	47	81	-	-	-	-	-	-
S.C.	4	2	21	16	11	17	-	-	-	-	-	-
Ga.	15	15	38	-	13	-	-	-	-	-	-	-
Fla.	15	1	84	48	48	51	-	-	-	-	-	1
E.S. CENTRAL	11	8	129	414	147	137	-	-	-	-	-	-
Ky.	1	2	19	6	4	18	-	-	-	-	-	-
Tenn.	10	2	58	308	86	108	-	-	-	-	-	-
Ala.	-	3	30	60	15	11	-	-	-	-	-	-
Miss.	-	1	22	40	42	U	-	-	-	-	-	-
W.S. CENTRAL	9	8	848	844	103	124	-	-	-	-	-	-
Ark.	1	-	60	114	15	18	-	-	-	-	-	-
La.	-	-	44	14	16	11	-	-	-	-	-	-
Okla.	7	8	359	415	3	13	-	-	-	-	-	-
Tex.	1	-	385	301	69	82	-	-	-	-	-	-
MOUNTAIN	22	19	862	797	191	218	-	-	-	-	-	3
Mont.	-	-	30	16	1	-	-	-	-	-	-	-
Idaho	-	1	37	97	9	23	-	-	-	-	-	-
Wyo.	-	-	10	6	7	5	-	-	-	-	-	-
Colo.	2	3	109	78	46	35	-	-	-	-	-	-
N. Mex.	1	6	62	117	64	86	-	-	-	-	-	-
Ariz.	9	5	357	225	32	28	-	-	-	-	-	-
Utah	2	3	190	196	19	29	-	-	-	-	-	-
Nev.	8	1	67	62	13	12	-	-	-	-	-	3
PACIFIC	76	82	1,596	1,868	326	367	-	3	-	2	5	32
Wash.	-	-	106	110	11	18	-	-	-	-	-	4
Oreg.	11	10	97	282	33	32	-	-	-	-	-	-
Calif.	62	70	1,349	1,442	273	314	-	-	-	2	2	1
Alaska	1	-	8	13	5	1	-	-	-	-	-	26
Hawaii	2	2	36	21	4	2	-	3	-	-	3	1
Guam	-	-	-	2	-	-	U	-	U	-	-	-
P.R.	-	-	70	14	122	33	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	2	10	1	1	11	5	U	1	U	-	1	-

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

*Of 51 cases among children aged <5 years, serotype was reported for 20 and of those, 9 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 March 15, 1997, and March 16, 1996 (11th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	821	858	23	110	125	67	883	491	1	5	34
NEW ENGLAND	50	34	3	5	-	3	239	118	-	-	2
Maine	6	6	-	-	-	-	6	3	-	-	-
N.H.	5	1	-	-	-	-	35	13	-	-	-
Vt.	2	1	-	-	-	3	86	6	-	-	-
Mass.	30	10	-	-	-	-	102	93	-	-	-
R.I.	1	5	3	4	-	-	9	-	-	-	-
Conn.	6	11	-	1	-	-	1	3	-	-	2
MID. ATLANTIC	64	86	3	10	19	10	49	53	-	2	4
Upstate N.Y.	20	16	-	-	5	3	24	29	-	1	2
N.Y. City	12	11	-	-	3	-	5	9	-	1	1
N.J.	15	18	-	-	2	-	-	3	-	-	1
Pa.	17	41	3	10	9	7	20	12	-	-	-
E.N. CENTRAL	70	116	5	14	33	12	97	99	-	2	1
Ohio	44	45	-	3	14	3	45	41	-	-	-
Ind.	11	10	1	3	5	6	8	6	-	-	-
Ill.	-	35	3	5	8	3	15	19	-	-	1
Mich.	7	8	1	3	6	-	17	8	-	-	-
Wis.	8	18	-	-	-	-	12	25	-	2	-
W.N. CENTRAL	67	78	1	5	2	6	44	8	-	-	-
Minn.	2	3	1	3	-	6	31	1	-	-	-
Iowa	17	12	-	2	-	-	9	2	-	-	-
Mo.	32	41	-	-	-	-	-	3	-	-	-
N. Dak.	-	1	-	-	2	-	1	-	-	-	-
S. Dak.	3	2	-	-	-	-	1	-	-	-	-
Nebr.	4	8	-	-	-	-	2	1	-	-	-
Kans.	9	11	-	-	-	-	-	1	-	-	-
S. ATLANTIC	175	116	6	19	15	4	77	36	-	-	-
Del.	3	2	-	-	-	-	-	5	-	-	-
Md.	18	15	1	2	8	-	32	21	-	-	-
D.C.	1	2	-	-	-	-	2	-	-	-	-
Va.	10	14	-	1	2	-	13	-	-	-	-
W. Va.	1	4	-	-	-	-	3	-	-	-	-
N.C.	36	22	1	5	-	1	13	-	-	-	-
S.C.	32	17	-	1	3	-	3	-	-	-	-
Ga.	29	32	-	2	1	-	3	1	-	-	-
Fla.	45	8	4	8	1	3	8	9	-	-	-
E.S. CENTRAL	67	72	1	9	6	-	21	14	-	-	-
Ky.	14	8	-	-	-	-	1	6	-	-	-
Tenn.	27	22	-	3	1	-	7	5	-	-	-
Ala.	19	23	1	3	3	-	7	1	-	-	-
Miss.	7	19	-	3	2	-	6	2	-	-	N
W.S. CENTRAL	68	97	3	12	3	-	10	6	-	-	-
Ark.	16	9	-	-	-	-	3	2	-	-	-
La.	14	18	2	2	3	-	2	2	-	-	-
Okla.	8	5	-	-	-	-	-	1	-	-	-
Tex.	30	65	1	10	-	-	5	1	-	-	-
MOUNTAIN	54	56	-	4	6	9	167	56	-	-	-
Mont.	4	1	-	-	-	3	3	2	-	-	-
Idaho	4	7	-	1	-	6	102	8	-	-	-
Wyo.	-	3	-	-	-	-	3	-	-	-	-
Colo.	12	7	-	2	-	-	47	10	-	-	-
N. Mex.	11	12	N	N	N	-	7	15	-	-	-
Ariz.	12	16	-	-	1	-	5	3	-	-	-
Utah	8	4	-	1	-	-	-	1	-	-	-
Nev.	3	6	-	-	5	-	-	17	-	-	-
PACIFIC	206	203	1	32	41	23	179	101	1	1	27
Wash.	21	18	-	3	3	16	58	23	-	-	1
Oreg.	53	32	-	-	-	2	6	18	-	-	-
Calif.	131	148	-	23	31	5	110	55	1	1	24
Alaska	-	3	1	1	1	-	1	-	-	-	-
Hawaii	1	2	-	5	6	-	4	5	-	-	2
Guam	-	1	U	-	1	U	-	-	U	-	-
P.R.	2	-	-	-	1	-	-	-	-	-	-
V.I.	-	-	U	-	-	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 122 U.S. cities,* week ending March 15, 1997 (11th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	566	413	89	43	13	8	47
Boston, Mass.	165	108	37	8	8	4	15
Bridgeport, Conn.	50	36	10	4	-	-	4
Cambridge, Mass.	25	20	1	4	-	-	-
Fall River, Mass.	35	27	5	3	-	-	2
Hartford, Conn.	U	U	U	U	U	U	U
Lowell, Mass.	24	20	3	1	-	-	3
Lynn, Mass.	15	11	4	-	-	-	-
New Bedford, Mass.	20	18	2	-	-	-	4
New Haven, Conn.	32	23	3	5	-	1	4
Providence, R.I.	65	48	5	8	2	2	-
Somerville, Mass.	3	3	-	-	-	-	-
Springfield, Mass.	40	25	11	4	-	-	3
Waterbury, Conn.	34	29	3	2	-	-	3
Worcester, Mass.	58	45	5	4	3	1	9
MID. ATLANTIC	2,284	1,569	453	206	33	23	157
Albany, N.Y.	36	27	7	2	-	-	3
Allentown, Pa.	27	22	5	-	-	-	3
Buffalo, N.Y.	U	U	U	U	U	U	U
Camden, N.J.	U	U	U	U	U	U	U
Elizabeth, N.J.	21	13	5	2	-	1	-
Erie, Pa.§	28	25	3	-	-	-	3
Jersey City, N.J.	46	22	13	8	1	2	1
New York City, N.Y.	1,274	847	277	117	18	15	61
Newark, N.J.	93	43	25	20	5	-	7
Paterson, N.J.	U	U	U	U	U	U	U
Philadelphia, Pa.	399	284	74	32	7	2	38
Pittsburgh, Pa.§	46	41	5	-	-	-	7
Reading, Pa.	5	4	1	-	-	-	-
Rochester, N.Y.	144	108	19	15	1	1	11
Schenectady, N.Y.	U	U	U	U	U	U	U
Scranton, Pa.§	36	29	6	1	-	-	4
Syracuse, N.Y.	71	58	5	6	-	2	9
Trenton, N.J.	36	26	6	3	1	-	8
Utica, N.Y.	22	20	2	-	-	-	2
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,116	1,486	380	149	51	47	154
Akron, Ohio	48	35	9	-	2	2	-
Canton, Ohio	38	29	5	3	-	1	6
Chicago, Ill.	466	282	101	54	17	9	33
Cincinnati, Ohio	101	75	17	4	1	4	9
Cleveland, Ohio	152	101	39	7	3	2	3
Columbus, Ohio	205	151	29	11	6	8	26
Dayton, Ohio	135	99	25	3	5	3	15
Detroit, Mich.	204	117	42	29	10	6	6
Evansville, Ind.	36	30	5	1	-	-	3
Fort Wayne, Ind.	55	47	4	4	-	-	5
Gary, Ind.	U	U	U	U	U	U	U
Grand Rapids, Mich.	68	52	12	4	-	-	6
Indianapolis, Ind.	160	111	32	12	3	2	9
Lansing, Mich.	37	30	5	1	1	-	-
Milwaukee, Wis.	133	107	18	2	1	5	12
Peoria, Ill.	39	34	2	3	-	-	1
Rockford, Ill.	39	30	6	-	1	2	4
South Bend, Ind.	44	35	3	4	1	1	2
Toledo, Ohio	95	77	16	1	-	1	13
Youngstown, Ohio	61	44	10	6	-	1	1
W.N. CENTRAL	698	485	110	50	13	18	48
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	37	29	6	1	1	-	6
Kansas City, Kans.	24	13	5	6	-	-	-
Kansas City, Mo.	102	60	10	8	-	2	6
Lincoln, Nebr.	49	40	5	3	1	-	2
Minneapolis, Minn.	188	143	31	9	3	2	17
Omaha, Nebr.	64	45	12	2	2	3	5
St. Louis, Mo.	97	58	16	11	4	8	5
St. Paul, Minn.	73	56	12	2	1	2	4
Wichita, Kans.	64	41	13	8	1	1	3
S. ATLANTIC	1,380	891	280	119	60	29	79
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	244	153	50	22	14	5	25
Charlotte, N.C.	85	52	23	6	2	2	7
Jacksonville, Fla.	168	104	41	14	4	5	6
Miami, Fla.	106	64	22	10	7	2	-
Norfolk, Va.	56	44	6	3	1	2	3
Richmond, Va.	94	55	27	10	2	-	7
Savannah, Ga.	48	30	12	1	3	2	3
St. Petersburg, Fla.	76	61	6	4	2	3	7
Tampa, Fla.	183	139	25	12	4	3	15
Washington, D.C.	303	182	68	32	16	5	6
Wilmington, Del.	17	7	-	5	5	-	-
E.S. CENTRAL	628	441	116	45	12	14	66
Birmingham, Ala.	U	U	U	U	U	U	U
Chattanooga, Tenn.	73	52	14	6	-	1	11
Knoxville, Tenn.	91	65	20	4	1	1	11
Lexington, Ky.	73	52	11	7	2	1	13
Memphis, Tenn.	131	90	26	8	3	4	13
Mobile, Ala.	50	31	13	4	1	1	3
Montgomery, Ala.	64	49	10	4	-	1	7
Nashville, Tenn.	146	102	22	12	5	5	8
W.S. CENTRAL	1,640	1,093	314	146	47	40	118
Austin, Tex.	73	47	12	7	3	4	7
Baton Rouge, La.	48	33	10	4	1	-	1
Corpus Christi, Tex.	65	44	14	5	1	1	5
Dallas, Tex.	208	117	45	25	15	6	4
El Paso, Tex.	104	79	13	8	2	2	11
Ft. Worth, Tex.	116	87	16	10	-	3	11
Houston, Tex.	415	271	79	46	8	11	35
Little Rock, Ark.	79	48	18	7	5	1	7
New Orleans, La.	104	66	16	13	6	3	-
San Antonio, Tex.	247	174	50	14	3	6	14
Shreveport, La.	59	40	13	3	1	2	5
Tulsa, Okla.	122	87	28	4	2	1	18
MOUNTAIN	995	723	163	54	27	28	104
Albuquerque, N.M.	97	73	13	5	2	4	5
Boise, Idaho	47	36	5	2	2	2	6
Colo. Springs, Colo.	58	46	6	3	1	2	6
Denver, Colo.	111	77	20	7	5	2	13
Las Vegas, Nev.	193	138	36	9	7	3	16
Ogden, Utah	23	19	1	1	1	1	1
Phoenix, Ariz.	158	107	34	10	-	7	17
Pueblo, Colo.	36	27	4	2	2	1	6
Salt Lake City, Utah	101	71	15	5	6	4	8
Tucson, Ariz.	171	129	29	10	1	2	26
PACIFIC	1,953	1,371	336	157	47	41	169
Berkeley, Calif.	23	19	3	-	-	1	1
Fresno, Calif.	98	63	19	8	2	6	7
Glendale, Calif.	31	24	5	2	-	-	3
Honolulu, Hawaii	107	82	15	7	1	2	6
Long Beach, Calif.	87	61	17	6	2	1	11
Los Angeles, Calif.	543	374	99	45	16	9	35
Pasadena, Calif.	34	23	8	1	1	1	4
Portland, Oreg.	152	117	21	9	5	-	12
Sacramento, Calif.	U	U	U	U	U	U	U
San Diego, Calif.	185	121	30	18	8	8	26
San Francisco, Calif.	135	78	33	18	4	2	12
San Jose, Calif.	222	166	37	12	2	5	23
Santa Cruz, Calif.	41	33	5	1	-	1	10
Seattle, Wash.	147	99	24	19	2	3	4
Spokane, Wash.	65	52	8	4	1	-	7
Tacoma, Wash.	83	59	12	7	3	2	8
TOTAL	12,260¶	8,472	2,241	969	303	248	942

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.

Contributors to the Production of the *MMWR* (Weekly)

Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data

Denise Koo, M.D., M.P.H.
Deborah A. Adams
Timothy M. Copeland
Patsy A. Hall
Carol M. Knowles
Sarah H. Landis
Myra A. Montalbano

Desktop Publishing and Graphics Support

Morie M. Higgins
Peter M. Jenkins

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to *listserv@listserv.cdc.gov*. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at *http://www.cdc.gov/* or from CDC's file transfer protocol server at *ftp.cdc.gov*. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (404) 332-4555.

☆**U.S. Government Printing Office: 1997-532-228/47067 Region IV**