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Toy-Related Injuries Among Children and Teenagers — United States, 1996

Each year, approximately two billion toys and games are sold in the United States (*1*). Although most toys are safe when risks are measured against the frequency of their use, children are at risk for some toy-related injuries and deaths. To characterize the magnitude of this problem, CDC analyzed data from the U.S. Consumer Product Safety Commission (CPSC) for 1996. This report summarizes this analysis and underscores the importance of parental participation in the selection and use of toys.

CPSC collects product-related injury data from numerous sources, including a probability sample of U.S. hospitals with a 24-hour emergency department (National Electronic Injury Surveillance System [NEISS]), Medical Examiner and Coroner Alert Program (MECAP), newspaper clippings, death certificate files, telephone reports, and other written and electronic correspondence (*2*). CDC analyzed these data to compile the frequency of toy-related injuries and deaths that occurred during 1996 among persons aged <20 years. Products included toys and games intended for use by children.

During 1996, a total of 13 toy-related deaths among children were reported to CPSC (Table 1). An estimated 116,800 (95% confidence interval=98,500–135,100) nonfatal injuries requiring emergency department care were reported through NEISS. Of these, 76,000 (65%) occurred among males. Most cases (65,500 [56%]) involved children aged 0–4 years, followed by 33,500 (29%) among those aged 5–9 years, 12,000 (10%) among those aged 10–14 years, and 5800 (5%) among those aged 15–19 years.

Most (approximately 45%) toy-related injuries were lacerations; injuries also included abrasions or contusions (21%), ingestion or lodging of a foreign body (12%), fractures or dislocations (7%), sprains or strains (5%), and miscellaneous injuries (10%) (Figure 1). Approximately two thirds of all injuries occurred above the neck and involved the face (32%), head (15%), mouth (11%), and eye (5%); fingers accounted for 5% of injuries (Figure 2). Approximately 1% of children injured were admitted to the hospital for further treatment.

Reported by: Div of Unintentional Injury Prevention, National Center for Injury Prevention and Control, CDC.

Editorial Note: Children use toys for recreation, learning, exercise, psychosocial development, expression, and fantasy play. Most toys are designed, manufactured, and

Toy-Related Injuries — Continued

TABLE 1. Case descriptions of toy-associated fatalities, by toy, age and sex of decedent, and location of incident — United States, 1996

Toy/Age of child (yrs)	Sex	Location of incident	Description of injury
Balloons			
1	M	Home	Choked on balloons in his mouth while waiting for older sibling to inflate them.
2	F	Home	Choked on balloon she was chewing.
2	F	Home	Choked during loss of balance while balloon was in mouth.
2	F	Unknown	Choked on a balloon.
3	M	Inside	Choked on balloon during birthday party.
5	M	Home	Aspirated a balloon.
11	M	Outside	Choked while swallowing a balloon he was chewing.
Tricycles			
2	M	Outside	Rode tricycle through open gate into a pool.
3	M	Outside	Rode tricycle into an in-ground pool and drowned.
Miscellaneous			
1	M	Home	Choked on one-fourth-inch plastic bead.
2	F	Home	Choked on piece of plastic while in crib.
2	M	Home	Aspirated three-fourths-inch plastic toy part into lung.
6	M	Outside	Strangled by kite string hanging on a tree branch.

Source: U.S. Consumer Product Safety Commission Death Certificate, In-Depth Investigation, and Reported Incident Files, 1996.

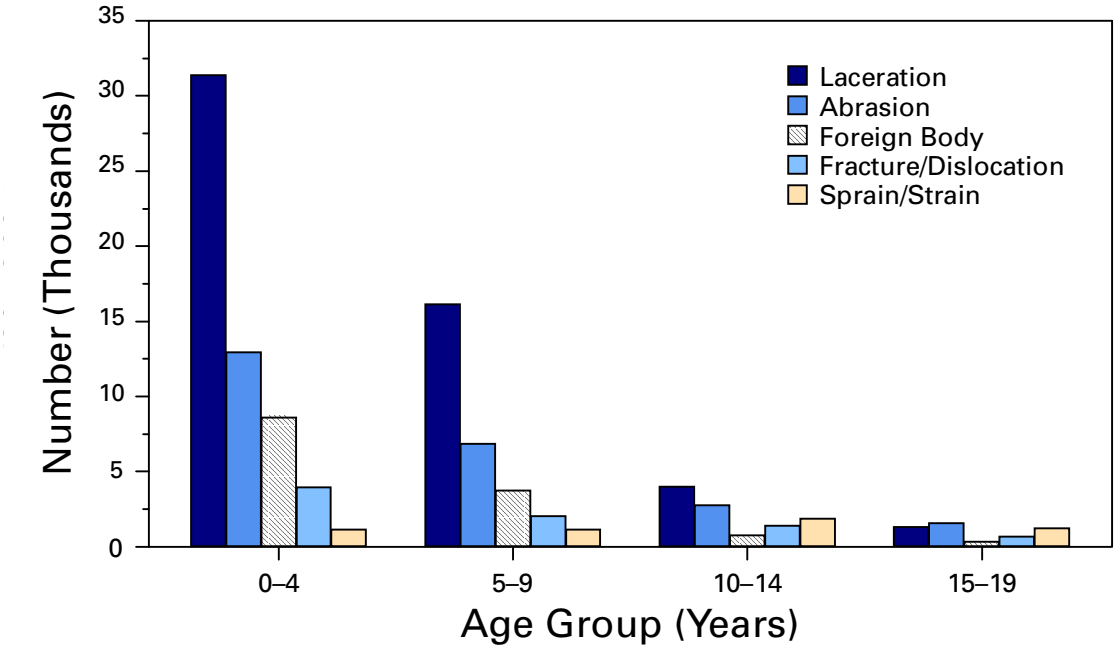
used safely. Surveillance for toy-related injuries and deaths can be useful to manufacturers, consumers, and persons who supervise use of toys.

At least four strategies can be employed to prevent toy-related injuries (see box). First, because children can be injured while using toys designed for an older child, children should use only toys that are age appropriate. Second, children should be directly supervised when playing with balloons, which result in seven to 10 deaths each year (*2*) (Table 1). Balloons should be stored out of reach of children, should not be inflated by children, and should be deflated and discarded after their use. An adult or competent adolescent should supervise activities when potentially dangerous household objects (e.g., sharp knives) are required for use with a toy (e.g., to build a model airplane). Third, because characteristics of the environment in which an age-appropriate toy is used may be associated with increased risk for injury, parents should ensure that toys are used in a safe and proper environment. Finally, because of the involvement of the head and face in toy-related injury, parents should be especially cautious when children are using projectile toys (e.g., dart guns).

CPSC has developed manufacturing standards that address toy hazards, such as those associated with small parts, sharp points and edges, electronic components, pacifiers, rattles, lawn darts, clacker balls, caps, and toys containing lead-based paint

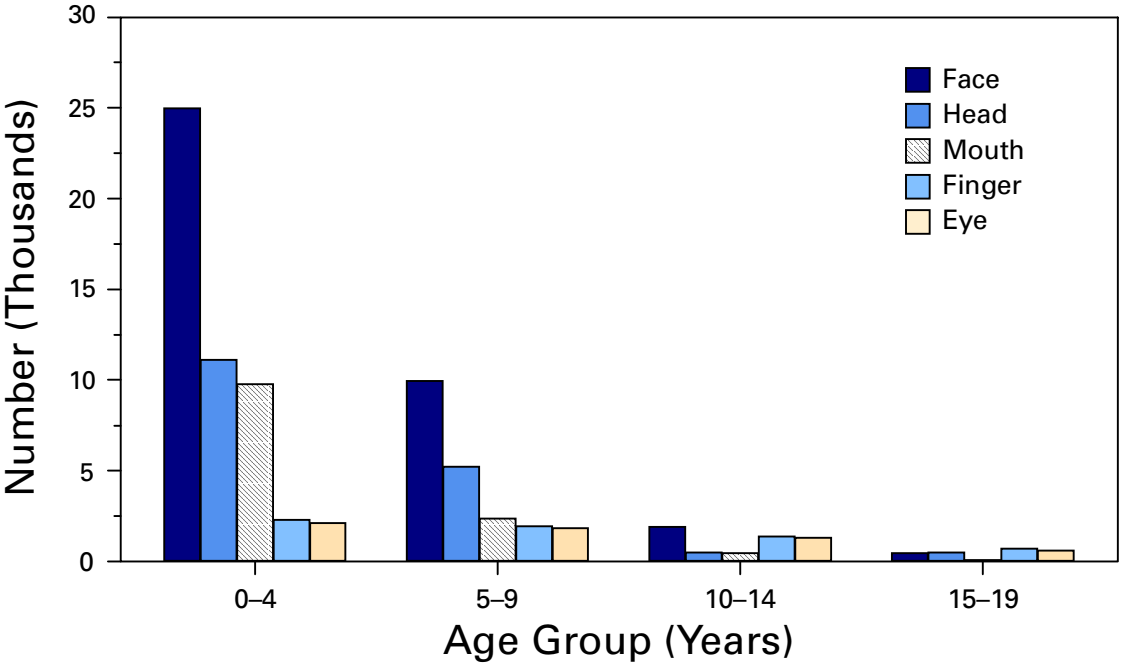
Toy-Related Injuries — Continued

FIGURE 1. Estimated number of toy-related injuries, by type of injury and age group of child* — United States, 1996



*Variance estimates can be obtained from the U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System.

FIGURE 2. Estimated number of toy-related injuries, by site of injury and age group of child* — United States, 1996



*Variance estimates can be obtained from the U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System.

Toy-Related Injuries — Continued

General Recommendations for Children's Safety with Toys

Toy Purchases:

1) Parents should check age and safety-related warnings on toys and strictly adhere to them, especially when buying for small children. Because risk for injury relates to the child's physical size or strength, age warnings address chronologic rather than developmental age.
2) Parents should select toys that match the abilities, skill, and interest level of the child.
3) Parents of children who mouth objects should avoid buying toys that have small parts or that may break into small parts.
4) Parents of children aged <8 years should not buy toys with sharp edges, points, or heating elements.
5) Purchases should take into consideration all children at home, not just the child for whom the toy is intended. Toys intended for older children should be stored out of reach of younger children.

Toy use:

1) Play is safer when adults are involved than when toys are given to children and parents supervise from a distance.
2) Parents and caregivers should demonstrate proper play when a toy is first used.
3) Parents should ensure that mobile toys are used in enclosed areas where the risk for falling is small. Tricycles and riding toys should not be used unsupervised near stairs, areas of traffic, or swimming pools.
4) Parents should teach children to put toys away after playing to prevent falls.
5) Parents should check toys periodically for breakage and loose, small parts, and such toys should be repaired or discarded.
6) Parents should periodically monitor children's play to check for improper use of toys.

Source: U.S. Consumer Product Safety Commission.

(D. Tinsworth, Division of Hazard Analysis, CPSC, personal communication, 1997). In addition, the Child Safety Protection Act*, which was designed to reduce toy-related chokings, requires manufacturers to place small parts and choking hazard warning labels on balloons, marbles, small balls, and games with small parts intended for use only by children aged ≥3 years. This act also requires manufacturers, importers, distributors, and retailers to notify CPSC about choking incidents involving such products. CPSC also monitors the manufacture and sale of toys in the United States. When toys fail to meet safety regulations or are associated with increased risk for injury, CPSC is authorized to take corrective action, including recalls and issuing public warnings (*3*). From 1995 through 1997, CPSC issued 310 recalls and corrective actions for toys that violated mandatory safety standards or that presented substantial product hazards.

*Public Law 103-267, 1994.

Toy-Related Injuries — Continued

Although governmental regulation has been useful in protecting children from toy-related injuries, parents and caregivers are primarily responsible for ensuring the safety of children. Parents and other caregivers can prevent toy-related injuries by making informed decisions about the correct type of toy to buy and periodically monitoring children's use of toys to ensure that toys are being used safely. Additional information about the safety of toys and corrective actions is available from CPSC, telephone (800) 638-2772; or on the World Wide Web, http://www.cpsc.gov/cpscpub/prerel/prerel.html.

References

1. Toy Manufacturers of America, Inc. Toy industry fact book, 1997–1998. New York: Toy Manufacturers of America, 1997.
2. US Consumer Product Safety Commission. A description of the injury or potential injury incident data base (IPII). Bethesda, Maryland: US Consumer Product Safety Commission, December 1989.
3. US Consumer Product Safety Commission. Corrective action handbook. Bethesda, Maryland: US Consumer Product Safety Commission, October 1988.

Outbreak of Staphylococcal Food Poisoning Associated with Precooked Ham — Florida, 1997

On September 27, 1997, a community hospital in northeastern Florida notified the St. Johns County Health Department about several persons who were treated in the emergency department because of gastrointestinal illnesses suspected of being associated with a common meal. This report summarizes the investigation of the outbreak by the Florida Department of Health; the findings implicated staphylococcal intoxication as the cause of illness among some persons who attended a retirement party on September 26, 1997.

Self-administered questionnaires were distributed to the 125 attendees to document food histories, illnesses, and symptoms. A case was defined as nausea and/or vomiting in a person who attended the party or consumed food served at the party and who became ill within 8 hours after eating. Leftover food was collected and submitted for laboratory analysis. Food preparers were interviewed about the purchase and preparation of food served at the party.

Of the approximately 125 persons who attended the party, 98 completed and returned questionnaires. Of these, 31 persons attended the event but ate nothing, and none of them became ill; they were excluded from further analysis. A total of 18 (19%) persons had illnesses meeting the case definition, including 17 party attendees and one person who ate food brought home from the party. Ill persons reported nausea (94%), vomiting (89%), diarrhea (72%), weakness (67%), sweating (61%), chills (44%), fatigue (39%), myalgia (28%), headache (11%), and fever (11%). Onset of illness occurred at a mean of 3.4 hours after eating (range: 1–7 hours); symptoms lasted a median of 24 hours (range: 2–72 hours). Seven persons sought medical treatment, and two of those were hospitalized overnight. Illness was strongly associated with eating ham (risk ratio=26.8 [95% confidence interval=3.8–189.6]). Of the 18 ill persons, 17 (94%) had eaten ham. The ill person who had not attended the party had eaten only

Staphylococcal Food Poisoning — Continued

leftover ham. None of the other foods served at the party were significantly associated with illness (Table 1).

One sample of leftover cooked ham and one sample of leftover rice pilaf were analyzed by reversed passive latex agglutination to identify staphylococcal enterotoxin and were positive for staphylococcal enterotoxin type A. Samples of stool or vomitus were not obtained from any ill persons, and cultures from nares or skin were not obtained from the food preparers.

On September 25, a food preparer had purchased a 16-pound precooked packaged ham, baked it at home at 400 F (204 C) for 1.5 hours, and transported it to her workplace, a large institutional kitchen, where she sliced the ham while it was hot on a commercial slicer. The food preparer reported having no cuts, sores, or infected wounds on her hands. She reported that she routinely cleaned the slicer in place rather than dismantling it and cleaning it according to recommended procedures and that she did not use an approved sanitizer. All 16 pounds of sliced ham had been placed in a 14-inch by 12-inch by 3-inch plastic container that was covered with foil and stored in a walk-in cooler for 6 hours, then transported back to the preparer's home and refrigerated overnight. The ham was served cold at the party the next day. The rice pilaf was prepared the day of the party by a different person.

Reported by: K Ward, MSEH, R Hammond, PhD, D Katz, PhD, D Hallman, Florida Dept of Health. Foodborne and Diarrheal Diseases Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: Staphylococcal food poisoning, caused by enterotoxin-producing strains of *Staphylococcus aureus*, is one of the most common foodborne illnesses (*1*). Sudden onset of nausea, vomiting, and diarrhea usually occurs 30 minutes to 8 hours after eating contaminated food; the incubation period may vary in relation to individual susceptibility, amount of toxin in the food, and amount of food ingested. Although the duration of illness is short and almost always self-limited, some deaths have been reported (*2*).

Although staphylococci are commonly found on environmental surfaces and in a wide variety of mammals and birds, humans are thought to be the primary source of organisms associated with staphylococcal food contamination. Organisms may be

TABLE 1. Attack rates and risk ratios associated with buffet foods, by food type — Florida, September 26, 1997

Food	Attack rate (%)		Risk ratio	(95% CI*)
	Ate	Did not eat		
Ham	65.4	2.4	26.8	(3.8–189.6)
Chicken	30.0	25.5	1.2	(0.5– 2.7)
Turkey	38.9	22.4	1.7	(0.8– 3.8)
Rice pilaf	15.4	29.6	0.5	(0.1– 2.0)
Rolls	47.1	20.0	1.4†	(0.8– 2.3)
Eggs	34.8	22.7	1.5	(0.7– 3.3)
Salad platter	31.3	25.5	1.2	(0.5– 2.9)
Nuts	25.0	27.1	0.9	(0.3– 3.3)
Cake	23.5	28.0	0.8	(0.3– 2.2)
Cookies	11.8	32.0	0.4	(0.1– 1.4)
Punch	18.4	37.9	0.5	(0.2– 1.1)

*Confidence interval.
†Summary risk ratio after stratifying on ham consumption.

Staphylococcal Food Poisoning — Continued

present in the nasal passages, throat, hair, and skin of healthy persons, and are abundant in cuts, pustules, and abscesses (*2,3*). Staphylococci grow in the temperature range of 45 F and 118 F (7 C and 48 C); rapid growth and enterotoxin production occurs between 68 F and 99 F (20 C and 37 C). Although growth usually is constrained by the presence of competing organisms, staphylococci thrive in high concentrations of salt and sugar that other organisms cannot tolerate. Staphylococcal enterotoxins are highly resistant to heat. Measures to prevent the growth of *S. aureus* are critical because normal temperatures used in cooking will not destroy the toxins, and foods containing staphylococcal enterotoxin usually look and taste normal (*2,3*).

Ham is the most commonly reported vehicle of transmission in staphylococcal food poisoning (*1,4*). The salt content of precooked, packaged hams is high, often as high as 3.5%, which provides an ideal growth medium for *Staphylococcus* (*2*). Although the exact source of contamination for the ham in this outbreak is unknown, the ham could have been contaminated by the food preparer's hands, even though she had no signs of staphylococcal infection. Only one third of food handlers from whom staphylococci are isolated have symptoms consistent with an active staphylococcal infection (*4*). The ham also could have been contaminated by contact with the slicer because the slicer had not been cleaned adequately. Slicing the ham when the ham was warm increased the surface area and provided a favorable temperature for replication of toxin-producing organisms. In addition, placement of a large quantity of warm, salty ham in a small, tightly closed container prevented rapid cooling and extended the time during which growth and toxin production occurred.

To reduce the incidence of staphylococcal gastroenteritis, potentially hazardous foods such as baked ham must be prepared and served appropriately. The amount of manual handling should be minimal, and food preparers should wash their hands thoroughly before handling food. Food contact surfaces and equipment such as slicers should be cleaned and sanitized. Ham should be sliced cold or, if served warm, immediately before serving to decrease the opportunity for replication of organisms introduced during slicing. Food should be eaten promptly after cooking or refrigerated immediately at a temperature ≤41 F (≤5 C). To permit rapid cooling, food should be stored in small portions in containers that are shallow and loosely covered; this method facilitates adequate air flow and rapid transfer of heat from the food to the container (*5*).

References

1. Bean NH, Goulding JS, Lao C, Angulo FJ. Surveillance for foodborne-disease outbreaks—United States, 1988–1992. In: CDC surveillance summaries (October). MMWR 1996;45(no. SS-5).
2. Bergdoll MS. Staphylococcal food poisoning. In: Cliver DO, ed. Foodborne diseases. San Diego, California: Academic Press, Inc, 1990:85–106.
3. Bergdoll MS. Staphylococcal intoxications. In: Riemann H, Bryan FL, eds. Food-borne infections and intoxications. 2nd ed. Orlando, Florida: Academic Press, Inc, 1979:444–90.
4. Holmberg SD, Blake PA. Staphylococcal food poisoning in the United States: new facts and old misconceptions. JAMA 1984;251:487–9.
5. Food and Drug Administration. Food code, 1997. Washington, DC: US Department of Health and Human Services, Public Health Service, 1997.

Update: Influenza Activity — United States, 1997–98 Season

In collaboration with the World Health Organization (WHO), its collaborating laboratories, and state and local health departments, CDC conducts surveillance to monitor influenza activity and to detect antigenic changes in the circulating strains of influenza viruses. This report summarizes influenza surveillance in the United States from September 1 through December 12, 1997, which indicates that influenza activity is at typical levels for this time of year and that influenza A(H3N2) viruses have been most commonly isolated.

From September 1 through December 12, influenza A viruses were reported from 25 states and the District of Columbia, and influenza B viruses were reported from three states (Figure 1). From September 28 through December 6, a total of 68 of 11,705 respiratory specimens tested by WHO collaborating laboratories in the United States were positive for influenza viruses. Of these, 66 (97%) were influenza type A, and two (3%) were influenza type B. All influenza A viruses that were subtyped were influenza A(H3N2). Of the 22 influenza A(H3N2) viruses antigenically characterized by CDC, 16 were A/Nanchang/933/95-like, the H3N2 component of the 1997–98 influenza vaccine, and six were similar to A/Sydney/05/97, a related but antigenically distinguishable strain that was first detected in Australia and New Zealand during June 1997 (*1*). One A/Sydney/05/97-like virus was isolated in the continental United States; this isolate was recently cultured from an infant in New York.

For the week ending December 6, state and territorial epidemiologists reported regional activity in one state and sporadic activity in 21 states, the District of Columbia, and Puerto Rico.* The percentage of patient visits to sentinel physicians for influenza-like illness remained within baseline levels (0–3%) during October through early December, and the percentage of deaths attributed to pneumonia and influenza as reported by the vital statistics offices of 122 cities has not exceeded the epidemic threshold this season.

Reported by: Participating state and territorial epidemiologists and state public health laboratory directors. World Health Organization collaborating laboratories. WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza, Influenza Br, Div of Viral and Rickettsial Disease, National Center for Infectious Diseases, CDC.

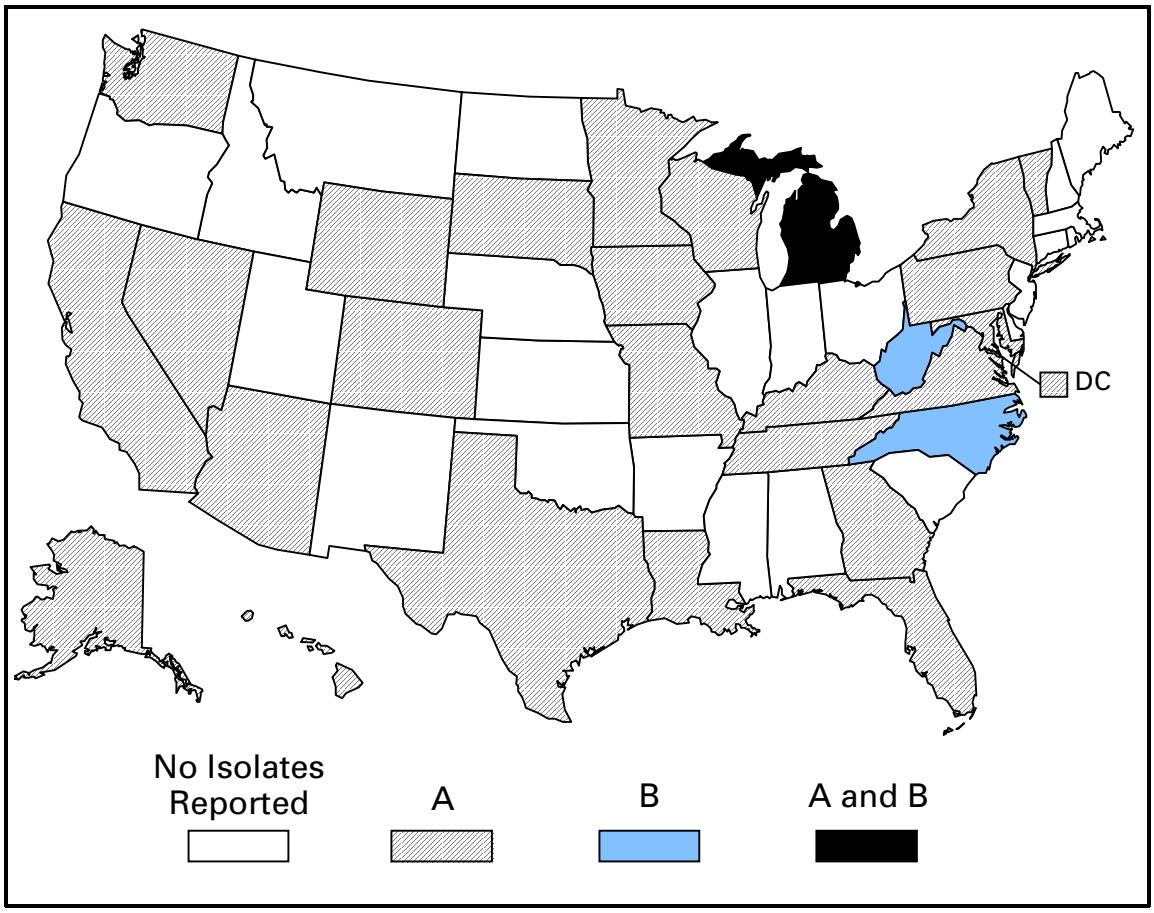
Editorial Note: The level of influenza activity in the United States this year has been typical for October through early December. Although the optimal time for influenza vaccination is October through mid-November, health-care providers should continue to offer influenza vaccine up to and even after influenza activity has been detected in the community, particularly to those persons at high risk for influenza-related complications (*2*). When influenza vaccine is administered after local outbreaks of influenza type A have been reported in a community, short-term prophylaxis with amantadine or rimantadine can be offered. Although these drugs are useful for treatment or prophylaxis for influenza type A infection, they are not effective against influenza type B.

Most H3N2 viruses antigenically characterized this season have been similar to the vaccine strain A/Nanchang/933/95 (H3N2). The extent to which the antigenic variant

*Levels of activity are 1) *no activity;* 2) *sporadic*—sporadically occurring influenza-like illness (ILI) or culture-confirmed influenza, with no outbreaks detected; 3) *regional*—outbreaks of ILI or culture-confirmed influenza in counties having a combined population of <50% of the state's total population; and 4) *widespread*—outbreaks of ILI or culture-confirmed influenza in counties having a combined population of ≥50% of the state's total population.

Influenza Activity — Continued

FIGURE 1. Laboratory-confirmed influenza virus isolates, by state and type of virus — United States, September 1–December 12, 1997



A/Sydney/05/97 will circulate in the United States this season cannot be predicted. Vaccine effectiveness is dependent, in part, on the match between the vaccine and circulating strains; wider circulation of the variant might be associated with suboptimal vaccine protection (*3–5*). Even when the match between circulating strains and the vaccine strain is good, outbreaks of influenza can still occur among vaccinated persons. In settings, such as nursing homes, that house persons at high risk for influenza-related complications, contingency plans for rapid diagnostic testing for influenza type A viruses can help detect outbreaks early and guide the usage of antiviral drugs for prophylaxis and treatment.

Throughout the season, influenza surveillance data are updated weekly and are available through CDC's fax information system, telephone (888) 232-3299 by requesting document number 361100 and entering the telephone number to which the document should be transmitted, or through CDC's Influenza Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases, World-Wide Web site http://www.cdc.gov/ncidod/diseases/flu/weekly.htm.

References

1. CDC. Update: influenza activity—United States, 1997–98 season. MMWR 1997;46:1094–8.

Influenza Activity — Continued

2. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1997;46(no. RR-9).
3. Stiver HG, Graves P, Eickhoff TC, Meiklejohn G. Efficacy of "Hong Kong" vaccine in preventing "England" variant influenza A in 1972. N Engl J Med 1973;289:1267–71.
4. Couch RB, Keitel WA, Cate TR, Quarles JM, Taber LA, Glezen WP. Prevention of influenza virus infections by current inactivated influenza A virus vaccines. In: Brown LE, Hampson AW, Webster RG, eds. Options for the control of influenza III. Amsterdam, Netherlands: Excerpta Medica/Elsevier Science Publishers BV, 1996:97–106.
5. Sugaya N, Nerome K, Ishida M, Matsumoto M, Mitamura K, Nirasawa M. Efficacy of inactivated vaccine in preventing antigenically drifted influenza type A and well-matched type B. JAMA 1994;272:1122–6.

As part of its continuing commemoration of CDC's 50th anniversary in July 1996, MMWR *is reprinting selected* MMWR *articles of historical interest to public health, accompanied by current editorial notes. Reprinted below are the reports published May 25 and July 27, 1979, which are two of the seven reports in* MMWR *describing the last oubreak of poliomyelitis in the United States.*

[From the May 25, 1979,* MMWR*]

Epidemiologic Notes and Reports

Poliomyelitis — United States, Canada

As of May 22, an additional case of polio caused by type 1 poliovirus has been reported in Pennsylvania, bringing to 4 the total number of such cases this year. Two other states have reported suspected cases. Three of the confirmed and both suspected cases are in Amish residents (*1,2*). In addition, Ontario, Canada, has confirmed a case of paralytic poliomyelitis (type 1 virus) in an Amish woman.

United States: The Pennsylvania Department of Health's most recent report is of a case of non-paralytic polio (aseptic meningitis) in a 36-year-old, non-Amish woman whose vaccination history is unclear. The woman became ill on April 30. She was hospitalized with apparent aseptic meningitis on May 8. The State Laboratory confirmed a poliovirus type 1 isolate from her stool on May 14. The patient is from Mifflin County, where 2 cases of paralytic polio were recently identified in an Amish community (*2*). Although this woman's husband has had regular contact with Amish farmers in the county, the patient, herself, has had no direct contact with this community. She is the first non-Amish ill person identified in 1979 with confirmed poliovirus type 1.

In addition, Iowa and Wisconsin are each currently evaluating a case of acute paralytic illness in a previously unvaccinated Amish person. These 2 patients became ill on April 30 and May 5, respectively. In Wisconsin at least 8 of 20 stool specimens from the patient's unvaccinated family members showed early growth of probable enterovirus.

Canada: Ontario has reported a case of paralytic poliomyeltis in a previously unvaccinated, 25-year-old Amish woman, hospitalized on May 13 with right lower extremity weakness. Her brother was hospitalized the same day with a similar acute paralytic disorder. Poliovirus type 1 has been confirmed from stool specimens of the woman and from her asymptomatic mother and sister. The female patient had at-

Poliomyelitis — Continued

tended an Amish wedding in the United States on April 5; Amish persons from various areas, including Pennsylvania, attended the wedding.

Reported by S Acres, MD, Dept of National Health and Welfare, Ottawa; J Joshua, MD, Ontario Ministry of Health, Toronto; R Gens, MD, WE Parkin, DVM, DrPH, State Epidemiologist, Pennsylvania Dept of Health; LA Wintermeyer, MD, State Epidemiologist, Iowa State Dept of Health; JP Davis, MD, State Epidemiologist, Wisconsin State Dept of Health and Social Services; Bur of State Services, Viral Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: There have now been 5 confirmed and 3 suspected cases of type 1 polio reported in the United States and Canada in 1979. These cases, from geographically distinct areas, are further evidence of the spread of the type 1—presumably wild-type—poliovirus. The virus appears to have spread from 1 unvaccinated Amish group to another, with transmission enhanced by the extensive travel and large social gatherings characteristic of this population. It is unlikely that the wild poliovirus will spread significantly among the general population, even to areas adjacent to Amish groups, because routine immunization practices have led to a high level of community protection.

Because dissemination of poliovirus is occurring among unvaccinated Amish populations, and because of the possibility for increased (often inapparent) transmission throughout the upcoming summer months, CDC considers the entire American Amish population at risk of infection and recommends vaccination of all unvaccinated Amish persons (including adults) with a full series of trivalent oral poliovirus vaccine (TOPV). TOPV is also recommended for unimmunized persons who are in daily contact with an unvaccinated community from which a wild-type poliovirus is isolated. Immunization levels of children in areas near Amish communities should be reviewed to assure that routine immunizations are up-to-date.

CDC has notified all 21 states known to have Amish residents of the new cases and of current recommendations. These states include Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Montana, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, and Wisconsin. Particularly in these states, physicians should include polio in the differential diagnosis of aseptic meningitis and acute paralytic disease.

References

1. MMWR 28:49, 1979
2. MMWR 28:207, 1979

[From the July 27, 1979,* MMWR*]

Epidemiologic Notes and Reports

Follow-Up on Poliomyelitis — United States, Canada, Netherlands

No new cases of epidemic-associated poliomyelitis have been reported to CDC during the past month. Two cases previously reported as suspected have now been confirmed, bringing the 1979 total of confirmed cases in the United States and Canada to 17. Fourteen of these cases (all paralytic) occurred in unvaccinated Amish persons; 2 (both nonparalytic) were in unvaccinated non-Amish persons, who lived in or near an Amish area; and 1 case (paralytic) occurred in an Amish infant, who received oral poliovirus vaccine 5 days before becoming ill. In the latter case, the patient had labo-

Poliomyelitis — Continued

ratory evidence of recent infection with both type 1 and type 2 poliovirus; the other 16 cases were clearly due to a wild (type 1) poliovirus. These 17 cases have been reported from 4 different states (Pennsylvania, 8 cases; Iowa, 3; Wisconsin, 3; Missouri, 1) and Canada (2). Immunization campaigns for the Amish are continuing; at least half of the nation's Amish have now received 1 or more doses of oral poliovirus vaccine.

Antigenic marker tests, consisting of (a) the van Wezel Method, using cross-absorbed rabbit antisera against vaccine and nonvaccine (wild) poliovirus strains and (b) the modified Wecker method, using guinea pig antisera against vaccine strains, have been performed on the poliovirus type 1 strains isolated from 5 U.S. cases and from a household contact of a sixth case. All isolates were nonvaccine-like in their antigenic characteristics.

The type 1 poliovirus isolated from the first 1979 poliomyelitis patient (an Amish female from Pennsylvania) shows a resemblance to a wild type 1 strain isolated in Kuwait in 1977 (*1*). Type 1 strains from cases occurring in the 1978 epidemic in the Netherlands and Canada also showed a resemblance to the Kuwait poliovirus strain (*1*).

Epidemiologic information also links last year's poliomyelitis epidemic in the Netherlands and Canada with this year's outbreak in the United States and Canada. During the 1978 outbreak, members of the affected religious group traveled from the Netherlands to Canada, where cases subsequently appeared. An Amish family from an Ontario town 15 miles from the affected area moved in late summer 1978 to the Pennsylvania town where the first U.S. Amish case subsequently occurred, in January 1979. There were also other, less well-defined contacts between Amish persons in Ontario and Pennsylvania.

Reported by Dr. A. van Wezel and Dr. van Zermarel, Rijks Institute voor der Volksgezondheit, the Netherlands; S Acres, MD, Dept of National Health and Welfare, Ottawa; State Epidemiologists from Iowa, Missouri, Pennsylvania, and Wisconsin; Virology Div, Bur of Laboratories, and Viral Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Both laboratory and epidemiologic information have suggested a link between the poliovirus type 1 strain from the 1979 outbreak in the United States and Canada with the type 1 strain responsible for last year's outbreak in the Netherlands and Canada. The onset of illness in the last case occurring in Canada in 1978 was in August, more than 4 months before the onset of illness in the first 1979 case, which occurred in Pennsylvana. Nearly 3 months elapsed before the next 1979 cases occurred, and these were also in Pennsylvania. These data suggest that the wild poliovirus circulated inapparently through several generations without causing paralytic disease. The absence of new cases of paralytic poliomyelitis reflects, in part, the success of the multi-state immunization campaigns for the Amish; the possibility of new cases remains, because the wild type 1 poliovirus may continue to be excreted by some infected persons throughout the summer months. However, the risk of additional cases is diminishing as more of the susceptible Amish persons receive vaccine.

Reference

1. van Wezel A: Personal communication.

Editorial Note—1997: *MMWR* should never again publish an article describing a contemporaneous outbreak of polio in the United States. Although it was not known at the time the 1979 *MMWR* articles were published, these articles describe the last outbreak of polio in the United States. The 1979 outbreak occurred in unvaccinated Amish persons living in Iowa, Missouri, Pennsylvania, and Wisconsin. Overall, 15 cases of

Poliomyelitis — Continued

illness caused by wild poliovirus type 1 occurred among U.S. citizens: all 10 paralytic cases occurred among unvaccinated Amish persons; three cases of transient paralysis occurred among unvaccinated Amish persons; and two nonparalytic cases occurred among unvaccinated members of the Mennonite church who were in frequent contact with Amish persons. Epidemiologic and virologic evidence indicated this outbreak resulted from importation of poliovirus from the Netherlands through Canada (Ontario), where outbreaks had occurred during 1978 in members of religious groups with objections to vaccination. Intensive studies in an outbreak-affected area where there were extensive contacts between Amish and non-Amish persons indicated that existing immunity levels provided an effective barrier to extensive circulation of poliovirus in the general community.

Investigation and control of the outbreak involved exceptional cooperation between local and state officials in the 21 states with Amish populations and CDC. As highlighted in the May 25, 1979, *MMWR* article, CDC considered the entire U.S. Amish population to be at risk for polio and recommended vaccination of all Amish persons, including adults. Epidemiologic aspects of the investigation were coordinated by CDC Epidemic Intelligence Service officers Marjorie Pollack, M.D., and Melinda Moore, M.D., under the supervision of Larry Schonberger, M.D., of CDC's Division of Viral Diseases (which then was responsible for polio surveillance). The programmatic efforts to reach and vaccinate Amish populations were coordinated through the Division of Immunization and state immunization programs, and used the efforts of many CDC public health advisors. Vaccination efforts involved extensive contacts with Amish groups in the 21 states and ultimately resulted in vaccination of approximately one half of Amish persons in the United States.

Another notable feature of this outbreak was the very close collaboration between epidemiologists and the laboratory. Using oligonucleotide mapping (the newest tool available at the time), CDC laboratory scientists Milford Hatch, Ph.D., and Olen Kew, Ph.D., were able to show that the virus responsible for illness in the United States was identical to the virus that had caused outbreaks in the Netherlands and Ontario, Canada. Subsequent development of more sophisticated techniques such as genomic sequencing further confirmed the link. This was one of the first instances of use of "molecular epidemiology" at CDC and heralded a collaboration between epidemiologists and laboratorians that has been a hallmark of the global polio-eradication program.

The 1979 outbreak demonstrated both the tremendous progress to date in achieving protection of the U.S. population but also the fact that polio could find a way to reach the remaining pockets of susceptible persons in the country. In addition, the outbreak made clear the necessity of taking a global approach to polio.

During the first half of the 20th century, paralytic polio was a major cause of illness and public concern in the United States; reported cases increased annually and peaked at approximately 20,000 reported cases in 1952. The introduction of inactivated poliovirus vaccine (IPV) in 1955 and the subsequent introduction of oral poliovirus vaccine (OPV) in 1961 had a dramatic impact on the occurrence of disease, with the numbers of reported cases and outbreaks progressively decreasing to very low levels by 1970.

Throughout the 1970s, there was continued evidence of possible circulation of wild poliovirus in the United States. During the decade, 17 cases of polio were imported

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from other countries and for 30 cases of paralytic polio, no foreign source could be determined (endemic cases). Since the reports in 1979, no endemic cases have been reported in the United States, although imported cases (on average less than one per year, predominantly from Mexico) continued to occur throughout the 1980s.

In 1985, the Health Ministers of the Americas adopted a goal of regional eradication of polio from the Western Hemisphere by 1990. The subsequent implementation of polio-eradication strategies (focusing on routine vaccination with OPV, mass vaccination of all children aged 0–4 years through annual National Immunization Days [NIDs], effective surveillance, and response to cases) resulted in a dramatic reduction in importations of polio. The last case of paralysis caused by indigenously acquired wild poliovirus in the Americas had onset in August 1991, and in 1994, the hemisphere was certified free of polio by an independent commission.

Other industrialized countries have had experiences similar to those of the United States. Most western European countries have been free of epidemic or endemic polio for many years, although limited outbreaks occurred in Finland in 1984–1985 and in the Netherlands in 1992–1993. Asia and Africa have been the areas most affected by polio in recent years.

In 1988, the World Health Assembly adopted a goal of global eradication of polio by 2000, and eradication efforts began throughout the world, largely using the strategies developed in the Americas. Under World Health Organization (WHO) leadership, a remarkable partnership of public and private organizations has been formed. Chief among these has been Rotary International, United Nations Children's Fund (UNICEF), and CDC. Additional financial support has been provided by the governments of Australia, Canada, Denmark, Italy, Japan, Norway, Sweden, the United Kingdom, and the United States. In the private sector, most notable has been the extraordinary commitment of Rotary International, which is donating approximately $400 million to support the effort and is providing essential financial and physical support from local Rotarians, including volunteers for social mobilization, vaccination posts, and advocacy efforts. A global laboratory network has been developed by WHO to support the eradication effort.

Unprecedented public health efforts by many countries where polio is endemic have characterized the polio-eradication effort. In several countries (including Afghanistan, El Salvador, and Sudan), civil wars have been temporarily suspended to allow vaccination of children in both government- and rebel-controlled areas. Seventeen nations in the Middle East, the Caucasus, and Central Asia have cooperated in coordinating NIDs (Operation MECACAR). Probably the most spectacular accomplishment has been the administration of OPV to more than 257 million children aged <5 years in a single week in 1996 as a result of simultaneous efforts in Bhutan, China, India, Myanmar, Nepal, Pakistan, Thailand, and Vietnam.

The reported incidence of polio in India has declined dramatically. China, with approximately one fourth of the world's population, has not detected indigenous wild poliovirus since 1994. The only indigenous transmission of polio in 1997 in WHO's Western Pacific Region occurred in the area of the Mekong delta. In the face of financial and societal crises, 31 countries in Africa have conducted NIDs, and those that have not done so already are in the planning phases.

The remaining challenges in the fight against polio are 1) resources to fully implement eradication strategies (a shortfall of approximately $50 million per year in donor

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support still remains); 2) maintenance of the political will to see the program through to ultimate success; and 3) development of surveillance systems in many countries to assure that circulation of poliovirus (or its absence) can be detected.

The United States has much to be proud of in the fight against polio. The U.S. Congress has supported global polio-eradication efforts through both the Agency for International Development and CDC. In addition, the United States is, and will continue to be, one of the major beneficiaries of polio eradication. The polio-free status the United States has enjoyed since 1979 comes at a cost, both personal and financial. Each year in the United States, there are five to 10 cases of vaccine-associated polio, a personal and societal tragedy; this number should be reduced substantially as a result of the recently adopted sequential IPV-OPV schedule. An estimated $230 million also is spent each year to maintain the high levels of polio vaccine coverage. Once polio is eradicated from the planet, polio vaccination can be discontinued, and the respective resources can be devoted to other important global health problems. In 1987, the objective of eradication was underscored: "Global eradication of poliomyelitis is inevitable; the only question is whether we will accomplish it or pass on the needed action to our successors. We believe we should act now to leave the legacy of a poliomyelitis-free world for our children" (*1*). It now seems clear that this commitment will be fulfilled.

1997 Editorial Note by Alan R Hinman, MD, MPH, Senior Consultant for Public Health Programs, Task Force for Child Survival and Development, and former Director, Immunization Division, Center for Prevention Services, CDC.

Reference

1. Hinman AR, Foege WH, de Quadros CA, Patriarca PA, Orenstein WA, Brink EW. The case for global eradication of poliomyelitis. Bull WHO 1987;65:835–40.

Dental Service Use and Dental Insurance Coverage — United States, Behavioral Risk Factor Surveillance System, 1995

In the United States, 94% of adults have evidence of past or current tooth decay, and only one third of adults aged 35–44 years have all of their permanent teeth (*1*). Dental insurance is associated with increased use of dental services and improved oral health status (*2,3*). This report summarizes state-specific and aggregated state data on both private and public sources of dental insurance coverage and the use of dental services among adults in 25 states* who participated in the oral health module of the 1995 Behavioral Risk Factor Surveillance System (BRFSS). The findings indicate that nearly half (44.3%) of adults in this survey reported having no dental insurance coverage.

The BRFSS is a continuous, state-based, random-digit–dialed telephone survey of the U.S. noninstitutionalized population aged ≥18 years. In 1995, a total of 56,339 adults participated in the core BRFSS in the 25 states that included the oral health module. State response rates ranged from 52.3% to 84.5% (median: 68.4%). Participants were asked whether they had had a dental visit within the previous 12 months (a past-year visit), one of the national health objectives for the year 2000 for oral health

*Alabama, Alaska, Arizona, Arkansas, California, Georgia, Idaho, Illinois, Indiana, Iowa, Maine, Massachusetts, Montana, New York, North Dakota, Ohio, Oregon, Rhode Island, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

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(objective 13.4) (*4*); reasons for not having had a past-year visit; and whether they had any kind of insurance coverage that pays for some or all of their dental care, including dental insurance, prepaid plans such as health-maintenance organizations (HMOs), or government plans such as Medicaid. Persons who reported having no dental-care coverage at the time of the interview were considered to be uninsured. Weighted prevalence estimates and 95% confidence intervals (CIs) were calculated by sex, age, education level, annual household income, and dentate status (i.e., the presence or absence of natural teeth: edentate=no teeth, dentate=one or more teeth) by SUDAAN.

Of respondents to the core BRFSS questionnaire, 93.3% participated in the oral health module. Of these, 69.0% (95% CI=±0.8 percentage points) reported having had a past-year dental visit (range: 61.4% [Arkansas] to 74.5% [Wisconsin]) (Table 1). Women were more likely than men to report having had a past-year visit (70.7% [95% CI=±1.0 percentage points] and 67.1% [95% CI=±1.2 percentage points], respectively) (Table 2). The highest prevalences of such visits were among dentate adults aged

TABLE 1. Weighted percentage of persons reporting a dental visit during the previous 12 months and persons reporting having no dental insurance, by state — United States, Behavioral Risk Factor Surveillance System, 1995*

	Dental visit during previous 12 months		No dental insurance	
State	**%**	**(95% CI†)**	**%**	**(95% CI)**
Alabama	64.1	(±2.7%)	49.8	(±2.8%)
Alaska	73.3	(±3.2%)	31.8	(±3.2%)
Arizona	66.5	(±3.2%)	43.9	(±3.2%)
Arkansas	61.4	(±2.6%)	55.4	(±2.6%)
California	66.5	(±2.4%)	43.7	(±2.3%)
Georgia	71.8	(±2.2%)	36.4	(±2.3%)
Idaho	65.9	(±2.0%)	46.6	(±2.1%)
Illinois	73.5	(±2.6%)	39.4	(±3.1%)
Indiana	65.2	(±2.2%)	43.7	(±2.2%)
Iowa	68.1	(±1.8%)	46.0	(±1.9%)
Maine	66.0	(±3.0%)	60.4	(±3.1%)
Massachusetts	74.2	(±2.3%)	46.0	(±2.6%)
Montana	65.6	(±3.0%)	57.3	(±3.1%)
New York	71.1	(±3.3%)	44.5	(±3.4%)
North Dakota	68.9	(±2.4%)	58.8	(±2.7%)
Ohio	73.9	(±2.7%)	47.3	(±3.2%)
Oregon	70.8	(±1.9%)	41.1	(±2.0%)
Rhode Island	69.2	(±2.5%)	43.2	(±2.6%)
Texas	65.1	(±2.7%)	47.0	(±2.7%)
Utah	73.3	(±2.2%)	39.5	(±2.5%)
Vermont	73.0	(±2.0%)	48.3	(±2.3%)
Virginia	73.5	(±2.4%)	40.8	(±2.6%)
Washington	68.8	(±1.8%)	40.6	(±1.9%)
Wisconsin	74.5	(±2.3%)	42.0	(±2.6%)
Wyoming	66.4	(±2.2%)	46.3	(±2.3%)
Total	**69.0**	**(±0.8%)**	**44.3**	**(±0.8%)**

*n=56,339. Excludes persons who said they did not know or who refused to respond.
†Confidence interval.

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TABLE 2. Weighted percentage of persons reporting a dental visit during the previous 12 months and persons reporting having no dental insurance, by selected characteristics — United States, Behavioral Risk Factor Surveillance System, 1995*

	Dental visit during previous 12 months		No dental insurance	
Characteristic	**%**	**(95% CI†)**	**%**	**(95% CI)**
Sex				
Men	67.1	(±1.2%)	43.5	(±1.2%)
Women	70.7	(±1.0%)	45.2	(±1.0%)
Age group (yrs)				
18–24	67.4	(±2.5%)	44.3	(±2.7%)
25–34	67.1	(±1.6%)	39.8	(±1.8%)
35–44	72.5	(±1.8%)	34.2	(±1.8%)
45–54	75.0	(±1.8%)	35.9	(±2.2%)
55–64	69.8	(±2.0%)	49.7	(±2.2%)
≥65	61.6	(±1.6%)	69.3	(±1.8%)
Education level (yrs)				
<12	50.0	(±2.2%)	63.4	(±2.2%)
12	66.4	(±1.4%)	47.9	(±1.4%)
≥13	75.6	(±0.9%)	36.9	(±1.0%)
Annual household income				
<$15,000	51.2	(±2.5%)	67.2	(±2.5%)
$15,000–$24,999	59.2	(±1.8%)	61.0	(±1.8%)
$25,000–$34,999	67.6	(±1.8%)	43.4	(±1.8%)
≥$35,000	79.4	(±1.0%)	28.2	(±1.2%)
Insurance status				
Insured	78.3	(±1.0%)	—	
Uninsured	57.6	(±1.2%)	—	
Dentate status§				
Edentate	24.3	(±2.3%)	67.1	(±2.5%)
Dentate	72.5	(±0.4%)	42.4	(±0.4%)
Time since last visit				
≤1 year	—		36.5	(±1.0%)
≥5 years	—		69.4	(±2.5%)
Total	**69.0**	**(±0.8%)**	**44.3**	**(±0.8%)**

*n=56,339. Excludes persons who said they did not know or who refused to respond.
†Confidence interval.
§Edentate=no teeth, dentate=one or more teeth.

≥65 years (75.0%) and all persons aged 35–44 and 45–54 years; the lowest prevalences were among edentate adults aged ≥65 years (18.5%). The percentage of adults reporting a past-year visit varied directly with education levels and family incomes. The prevalence of a past-year visit was higher among insured adults than among uninsured adults (78.3% compared with 57.6%) and higher among dentate adults than among edentate adults (72.5% compared with 24.3%).

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A total of 44.3% (95% CI=±0.8 percentage points) of participants reported being uninsured at the time of interview (range: 31.8% [Alaska] to 60.4% [Maine]) (Table 1). This proportion was similar for both men (43.5% [95% CI=±1.2 percentage points]) and women (45.2% [95% CI=±1.0 percentage points]) (Table 2). The percentage of uninsured persons was lowest among persons aged 35–44 years and 45–54 years and highest among persons aged ≥65 years and varied inversely with education level and family income. In addition, the likelihood of being uninsured was higher among edentate adults than dentate adults (67.1% compared with 42.4%) and higher among adults whose last dental visit was ≥5 years ago than those with a past-year visit (69.4% compared with 36.5%).

The two most common reasons cited by respondents who did not have a past-year visit were that they did not perceive they had a dental problem (44.6%) and cost (26.6%). Among edentate adults, however, 89.5% did not perceive a problem, and 2.5% cited cost as a reason for not having had a past-year visit. Similar percentages of insured respondents (42.9%) and uninsured respondents (45.6%) did not perceive the need to visit a dentist. However, 36.0% of uninsured adults cited cost as the reason for not having had a past-year visit compared with 11.9% of insured adults.

Reported by: J Cook, MPA, Alabama; P Owen, Alaska; B Bender, Arizona; J Senner, PhD, Arkansas; B Davis, PhD, California; E Pledger, MPA, Georgia; C Johnson, MPH, Idaho; B Steiner, MS, Illinois; N Costello, MPA, Indiana; A Wineski, Iowa; D Maines, Maine; D Brooks, MPH, Massachusetts; P Smith, Montana; T Melnik, DrPH, New York; J Kaske, MPH, North Dakota; R Indian, MS, Ohio; J Grant-Worley, MS, Oregon; J Hesser, PhD, Rhode Island; K Condon, Texas; R Giles, Utah; R McIntyre, PhD, Vermont; L Redman, Virginia; K Wynkoop-Simmons, PhD, Washington; E Cautley, MS, Wisconsin; M Futa, MA, Wyoming. Behavioral Surveillance Br, Div of Adult and Community Health; Surveillance, Investigations, and Research Br, Div of Oral Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: The BRFSS oral health module generates state-specific estimates that for the first time document variation in past-year dental visits and dental insurance coverage for adults in participating states. Overall, state-specific prevalences of persons reporting a past-year visit varied inversely with prevalences of persons without dental insurance. This association is consistent with results of the National Health Interview Survey (*2*) and other previously published studies (*5,6*). However, in some states (e.g., Massachusetts, Ohio, and Vermont), use was high despite lower percentages of dental insurance coverage. Such differences may reflect differences in age distribution, income, or education level of adults in these states. Twelve states exceeded the national health objective of ≥70% of adults aged ≥35 years using the oral-health–care system during each year (*4*).

Among specific population groups (e.g., younger and older age groups, lower income or education level groups, or edentate persons), lower percentages of adults reported dental insurance coverage and dental services use. Because dental insurance typically is provided as an employee benefit, groups less likely to have dental insurance include young adults and elderly retired persons. Overall, uninsured adults were three times more likely than insured adults to cite cost as the main reason for not having had a past-year visit. Infrequent use of dental services has been associated with poor oral health among adults with lower income and education levels; such persons have more decayed teeth requiring treatment, more severe periodontal disease, and are more likely to be edentate than adults with more education and higher incomes (*7*). Regardless of insurance status, however, almost half the adults who did

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not have a past-year visit in 1995 did not perceive the need for one. This finding was particularly evident among edentate adults and is of concern because adults without teeth are older, and the incidence of oral cancers that could be detected during an oral examination is higher among older adults (*8–10*).

Interpretations of these survey results are subject to at least two limitations. First, because the BRFSS does not include households without a telephone, these findings may underestimate the prevalence of being uninsured in some population groups (e.g., lower income or education level). Second, adults who are eligible for Medicaid or who have Medicare who reported having dental insurance may not be aware that coverage for many dental services may be limited or nonexistent.

The BRFSS can provide routinely available, timely, state-specific data on reported use of dental services and dental insurance coverage that may be used for monitoring trends over time and the effects of changes in the dental health-care delivery system. Changes may include the provision of coverage of some dental services offered to Medicare beneficiaries by HMOs; increasing proportions of the population, including those eligible for Medicaid, covered by managed-care versus fee-for-service dental insurance plans; and increases in the price of dental services relative to the Consumer Price Index. The BRFSS also can serve as the basis for planning and evaluating oral health promotion and disease prevention programs. Such programs are designed to enhance knowledge and behaviors that can maintain and improve oral health (e.g., routine oral examinations and primary and secondary prevention services).

References

1. National Center for Health Statistics. Healthy people 2000 review, 1995–96. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1996.
2. Bloom B, Gift HC, Jack SS. Dental services and oral health: United States, 1989. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1992:8–11; DHHS publication no. (PHS)93-1511. (Vital and health statistics; series 10, no. 183).
3. Damiano PC, Shugars DA, Johnson JD. Expanding health insurance coverage and the implications for dentistry. J Public Health Dent 1992;52:52–8.
4. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives—full report, with commentary. Washington, DC: US Department of Health and Human Services, Public Health Service, 1990; DHHS publication no. (PHS)91-50212.
5. Manning WG, Bailit HL, Benjamin B, Newhouse JP. The demand for dental care: evidence from a randomized trial in health insurance. J Am Dent Assoc 1985;110:895–902.
6. Grembowski D, Conrad D, Milgrom P. Utilization of dental services in the United States and an insured population. Am J Public Health 1985;75:87–9.
7. Chen M-S. Oral health of disadvantaged populations. In: Cohen LK, Gift HC, eds. Disease prevention and oral health promotion: socio-dental sciences in action. Munksgaard, Copenhagen: Federation Dentaire International, 1995:153–212.
8. CDC/National Institutes of Health. Cancers of the oral cavity and pharynx: a statistics review monograph, 1973–1987. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, 1991.
9. Silverman S Jr. Oral cancer. Atlanta, Georgia: American Cancer Society, 1985.
10. US Preventive Services Task Force. Guide to clinical preventive services: report of the US Preventive Services Task Force. 2nd ed. Baltimore, Maryland: Williams & Wilkins, 1996:175–80.

Isolation of Avian Influenza A(H5N1) Viruses from Humans — Hong Kong, May–December 1997

A strain of influenza virus that previously was known to infect only birds has been associated with infection and illness in humans in Hong Kong. The first known human case of influenza type A(H5N1) occurred in a 3-year-old child who died from respiratory failure in May 1997. In Hong Kong, the virus initially was identified as influenza type A, but the subtype could not be determined using standard reagents. By August, CDC; the National Influenza Center, Rotterdam, the Netherlands; and the National Institute for Medical Research, London, United Kingdom, had independently identified the virus as influenza A(H5N1). An investigation conducted during August–September by the Hong Kong Department of Health and CDC excluded the possibility of laboratory contamination. Since this initial case was identified, six additional persons in Hong Kong have been confirmed to have influenza A(H5N1) infection, and two possible cases have been identified. This report summarizes the nine cases identified thus far and describes preliminary findings from the ongoing investigation, which indicate that multiple influenza A(H5N1) infections have occurred and that both the source and mode of transmission are uncertain at this time.

Confirmed Cases

Patient 1. On May 9, 1997, a previously healthy 3-year-old boy developed fever, sore throat, and cough. The child's symptoms persisted, and on May 15, he was hospitalized. His illness progressed, and on May 18, he was admitted to the pediatric intensive care unit (ICU). On May 21, the child died from acute respiratory distress secondary to viral pneumonia. Influenza A(H5N1) virus was isolated from a tracheal aspirate collected on May 19. The child may have been exposed to ill chickens before he became ill.

Patient 2. On November 6, a 2-year-old boy with a congenital heart disease developed high fever, cough, and sore throat and was hospitalized the next day for presumed pneumonia. He had an uneventful recovery and was discharged from the hospital on November 9. A nasopharyngeal swab collected from the child on November 8 yielded influenza A(H5N1) virus.

Patient 3. On November 20, a previously healthy 13-year-old girl developed fever, sore throat, and cough; she was hospitalized on November 26 because of pneumonia. On November 27, she was transferred to the ICU and placed on mechanical ventilation. As of December 17, she remained hospitalized. Influenza A(H5N1) virus was isolated from a tracheal aspirate collected on November 28.

Patient 4. On November 24, a previously healthy 54-year-old man developed fever and cough and on November 29, he was hospitalized because of pneumonia. His condition deteriorated, and he died on December 5. A broncho-alveolar lavage specimen collected on December 1 yielded influenza A(H5N1) virus.

Patient 5. On December 4, a 24-year-old woman developed fever, sore throat, cough, and dizziness. Her symptoms worsened, and she was hospitalized on December 7. Her condition deteriorated, and on December 9, she was transferred to the ICU and placed on mechanical ventilation; as of December 17, she remained in the ICU. Influenza A(H5N1) was isolated from a tracheal aspirate collected on December 9.

Patient 6. On December 7, a 5-year-old girl developed fever, rhinitis, cough, sore throat, and vomiting. As of December 17, she remained hospitalized in satisfactory

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and stable condition. A nasopharyngeal aspirate collected on December 10 yielded influenza A(H5N1).

Patient 7. On December 12, a 2-year-old boy developed fever and was admitted to the hospital in good condition. The child is a cousin of patient 6, who frequently visited him and his family at their home. On December 16, a culture from the child was reported positive for influenza A(H5N1) virus.

Possible Cases

On November 24, a previously healthy 37-year-old man was hospitalized because of pneumonia; onset of illness was November 17. He recovered and was discharged from the hospital on December 9. Although respiratory specimens were unavailable for testing, preliminary results of serologic tests suggest infection with influenza A(H5N1); results of a neutralization assay, which is required to confirm infection, are pending.

The other possible case-patient is the 3-year-old sister of patient 7 and cousin of patient 6. She lived in the same apartment as patient 7 and had onset of fever on December 13 and was hospitalized in good condition. Preliminary laboratory results were positive for influenza A(H5N1) virus; confirmation of these results by virus isolation is pending.

Ongoing Investigation

The Hong Kong Department of Health and CDC are investigating these cases. The primary objectives of the ongoing investigation are to detect and investigate new cases and to identify potential sources, including whether and to what extent infection is being transmitted from person to person, birds to humans, or both. Blood specimens for measurement of antibody against influenza A(H5N1) and information concerning respiratory illness, exposure to birds, the type and degree of exposure to cases, and other relevant information are being collected from persons who had contact with case-patients and from control groups that did not have contact with case-patients.

Patients 1–6 lived in different parts of Hong Kong, had no contact with each other, and had no apparent common exposures. Patients 6 and 7 and the 3-year-old girl possible case-patient have all had contact with each other and common exposures. Influenza A(H5N1) viruses isolated from these patients are being fully characterized both antigenically and genetically by CDC.

Surveillance for influenza has been intensified in Hong Kong and Guangdong Province, China, following the identification of the first case of human A(H5N1) infection. Although some of the increased surveillance was conducted through outpatient facilities, most surveillance has occurred in hospitals. Beginning December 8, influenza surveillance was further intensified to include all government outpatient clinics in Hong Kong. Surveillance among poultry in Hong Kong indicates continued circulation of A(H5N1) viruses since March, when outbreaks on poultry farms were first detected.

Reported by: TA Saw, FHKAM (Community Medicine), Hong Kong Dept of Health; W Lim, FRCP, Virus Unit, Hong Kong Dept of Health; K Shortridge, PhD, The Univ of Hong Kong; J Tam, PhD, Chinese Univ of Hong Kong; KK Liu, DRVS, Dept of Agriculture and Fisheries; KH Mak, FHKAM (Community Medicine); T Tsang, MPH, YY Ho, MSC, FY Lee, MBBS, H Kwong, MMED (Public Health), Hong Kong Dept of Health. Queen Mary Hospital; Queen Elizabeth Hospital; Prince of Wales Hospital; Yan Chai Hospital, Hong Kong. World Health Organization, Geneva, Switzerland. Influenza Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

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Editorial Note: The cases described in this report represent the first documented human infections with avian influenza A(H5N1) virus. One of the most important aspects of the investigation is to determine the source of infection and mode of transmission. However, this effort is complicated by the high prevalence of exposure to live poultry among residents of Hong Kong.

Although the spectrum of illness caused by human influenza virus infection can range from asymptomatic to fatal, most human influenza infections cause acute febrile respiratory illnesses that resolve without complications. Many of the cases of human infection with type A(H5N1) identified so far in Hong Kong have been unusually severe. However, because influenza surveillance in Hong Kong has been conducted primarily in hospitals, milder cases may not have been recognized, and the severity of infections identified to date may not be representative of the spectrum of illness caused by A(H5N1) infection in humans.

Infection with this influenza strain that is new to humans prompts consideration about whether this virus has the potential to spread globally and cause a pandemic. For an influenza pandemic to occur, a novel human influenza strain against which all or most of the human population has no antibody must be capable of sustained person-to-person transmission, causing widespread illness (*1*). As of December 17, acute respiratory illness among the population of Hong Kong apparently had not increased.

Although the potential for widespread transmission of this strain is presently unknown, as a precautionary measure, laboratory studies have been initiated to identify a candidate A(H5N1) vaccine strain. At this time, there are no plans for commercial vaccine production.

Two antiviral drugs, amantadine and rimantadine, inhibit replication of virtually all naturally occurring human and animal strains of influenza type A and therefore can be useful for prophylaxis and treatment of influenza A infections (*2–4*). Influenza A viruses resistant to amantadine and rimantadine can emerge during treatment, but drug-resistant influenza viruses have only rarely been isolated from specimens collected as part of routine influenza surveillance (*5,6*). Influenza A(H5N1) isolates from Hong Kong that have been tested are sensitive to amantadine and rimantadine.

Persons considering travel to Hong Kong should consider that 1) the number of clinical cases of influenza A(H5N1) identified to date is small despite the intensive surveillance that has been conducted among the 6.5 million residents of Hong Kong and 2) there has been no detected increase in the incidence of acute respiratory illness among residents of Hong Kong. However, the risk for infection to persons living in or visiting Hong Kong cannot be determined with certainty, and the risk may change over time. Although no human influenza A(H5N1) infections have been identified outside Hong Kong, worldwide surveillance for influenza is critical to monitor the circulation of various influenza strains. Human influenza types A(H3N2), A(H1N1) and B continue to circulate worldwide (*7,8*).

References

1. Cox N, Patriarca P. Influenza pandemic preparedness plan for the United States. J Infect Dis 1997;176(suppl 1):S4–S7.
2. Douglas RG. Drug therapy: prophylaxis and treatment of influenza. N Engl J Med 1990;322:443–50.

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3. Tominack RL, Hayden FG. Rimantadine hydrochloride and amantadine hydrochloride use in influenza A virus infections. Infect Dis Clin North Am 1987;1:459–78.
4. Hayden FG. Antivirals for pandemic influenza. J Infect Dis 1997;176(suppl 1):S56–S61.
5. Belshe RB, Burk B, Newman F, Cerruti RL, Sim IS. Resistance of influenza A virus to amantadine and rimantadine: results of one decade of surveillance. J Infect Dis 1989;159:430–5.
6. Ziegler T, Hemphill M, Zeigler ML, Klimov A, Cox N. Rimantadine resistance of influenza A viruses: an international surveillance. Presented at the 7th ISAR Conference, Charleston, South Carolina, March 1994.
7. CDC. Update: influenza activity—worldwide, March–August 1997. MMWR 1997;46:815–8.
8. CDC. Update: influenza activity—United States, 1997–98 season. MMWR 1997;46:1192–4.

Notice to Readers

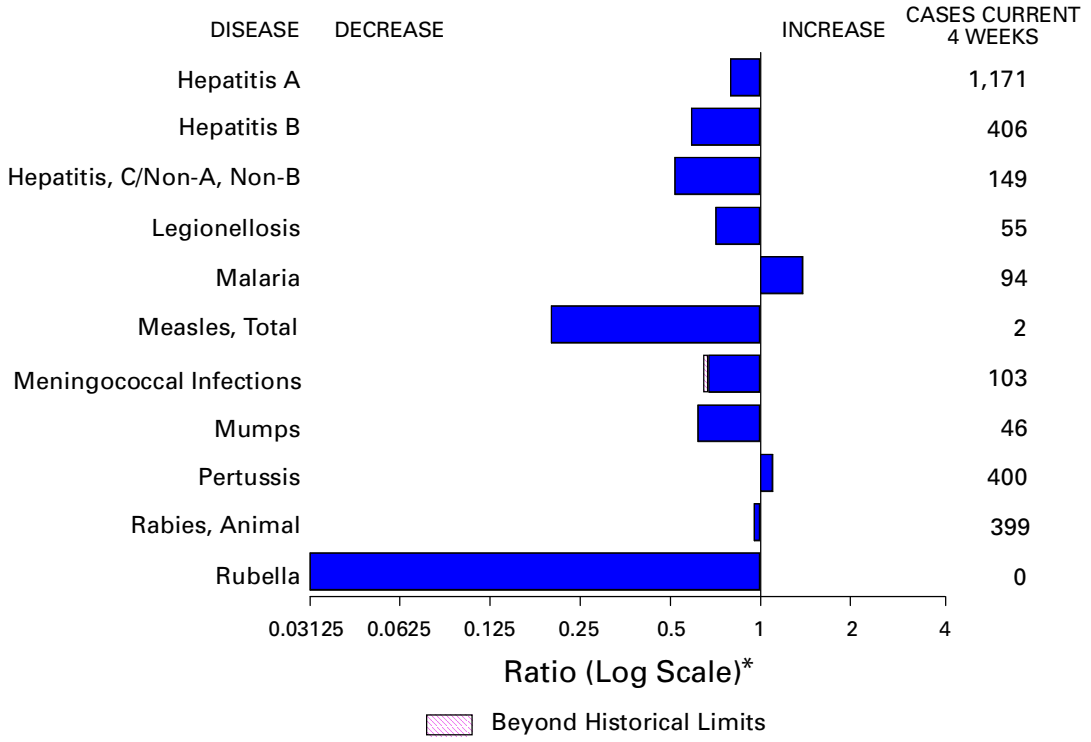
Satellite Broadcast on Women with Vaginal Infection

Caring for Women with Vaginal Infections: Bacterial Vaginosis, Trichomoniasis, Vulvovaginal Candidiasis, a live interactive satellite broadcast, will be presented to sites nationwide Thursday, March 12, 1997, from noon to 2 p.m. eastern standard time. Cosponsors are CDC and the Baltimore and Denver Sexually Transmitted Disease/Human Immunodeficiency Virus prevention training centers.

This program will address how to perform comprehensive and productive history and pelvic examinations, testing and sampling techniques, management of patients and their partners, and "work up" of women with asymptomatic, nonspecific, and recurrent vaginal infections.

Information about registration, satellite coordinates, and Continuing Medical Education and Continuing Education Units is available from the Prevention Training Center in each public health region: Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), telephone (617) 983-6945; Region II (New Jersey, New York, Puerto Rico, and Virgin Islands), telephone (518) 474-1692; Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia), telephone (410) 396-4448; Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee), telephone (205) 930-1196; Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin), telephone (513) 558-3197; Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas), telephone (214) 819-1947; Region VII (Iowa, Kansas, Missouri, and Nebraska), telephone (314) 747-0294; Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming), telephone (303) 436-7226; Region IX (Arizona, California, Hawaii, and Nevada), telephone (415) 554-9630; and Region X (Alaska, Idaho, Oregon, and Washington), telephone (206) 720-4222.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending December 13, 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 December 13, 1997 (50th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	4
Brucellosis	73	Poliomyelitis, paralytic¶	1
Cholera	10	Psittacosis	37
Congenital rubella syndrome	4	Rabies, human	2
Cryptosporidiosis*	1,875	Rocky Mountain spotted fever (RMSF)	393
Diphtheria	5	Streptococcal disease, invasive Group A	1,326
Encephalitis: California*	118	Streptococcal toxic-shock syndrome*	30
eastern equine*	10	Syphilis, congenital**	525
St. Louis*	12	Tetanus	41
western equine*	-	Toxic-shock syndrome	125
Hansen Disease	104	Trichinosis	9
Hantavirus pulmonary syndrome*†	17	Typhoid fever	338
Hemolytic uremic syndrome, post-diarrheal*	60	Yellow fever	-
HIV infection, pediatric*§	214		

-: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 November 25, 1997.
¶One suspected case of polio with onset in 1997 has also been reported to date.
**Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending December 13, 1997, and December 14, 1996 (50th 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	53,031	63,230	441,118	412,224	2,233	1,503	274,518	305,811	3,002	3,355
NEW ENGLAND	2,252	2,666	16,816	16,466	194	121	5,548	6,089	54	98
Maine	51	42	997	888	17	-	65	54	-	-
N.H.	40	85	764	722	13	14	94	156	8	7
Vt.	32	19	406	377	8	3	46	45	2	26
Mass.	808	1,305	7,103	6,631	104	89	2,054	2,090	37	59
R.I.	142	166	1,744	1,759	10	-	380	474	7	6
Conn.	1,179	1,049	5,802	6,089	42	15	2,909	3,270	-	-
MID. ATLANTIC	16,043	17,523	58,316	55,692	138	51	36,348	40,547	346	289
Upstate N.Y.	2,390	2,408	N	N	96	-	5,948	7,119	265	232
N.Y. City	8,610	9,499	30,377	26,127	13	8	14,213	12,790	-	3
N.J.	3,044	3,453	9,140	11,941	29	24	6,805	8,531	-	-
Pa.	1,999	2,163	18,799	17,624	N	19	9,382	12,107	81	54
E.N. CENTRAL	3,957	4,886	66,524	80,875	399	269	40,926	55,759	493	463
Ohio	798	1,118	19,072	19,950	106	52	11,965	14,525	20	33
Ind.	488	544	8,759	9,578	80	40	5,722	6,255	11	8
Ill.	1,715	2,086	10,405	22,061	68	31	5,077	15,587	81	90
Mich.	716	875	19,616	19,360	145	102	14,284	14,646	381	332
Wis.	240	263	8,672	9,926	N	44	3,878	4,746	-	-
W.N. CENTRAL	1,055	1,491	30,951	30,259	513	400	13,921	14,831	151	97
Minn.	194	270	7,090	5,096	212	201	2,622	2,205	4	4
Iowa	100	92	4,341	4,054	118	74	1,129	1,104	33	48
Mo.	505	793	11,471	11,749	54	69	7,394	8,269	98	22
N. Dak.	12	12	623	942	15	12	44	36	3	-
S. Dak.	8	12	1,388	1,412	28	32	162	167	-	-
Nebr.	90	93	2,201	2,670	60	-	899	1,047	3	8
Kans.	146	219	3,837	4,336	26	12	1,671	2,003	10	15
S. ATLANTIC	13,084	15,945	85,936	47,966	209	134	85,104	88,995	259	195
Del.	214	264	1,276	1,148	5	4	1,195	1,401	-	1
Md.	1,811	2,232	7,215	U	25	13	12,536	10,740	20	4
D.C.	955	1,195	N	N	2	-	4,178	4,305	-	-
Va.	1,113	1,097	10,969	11,286	N	41	8,362	8,878	24	16
W. Va.	121	112	2,791	2,217	N	1	908	805	16	9
N.C.	795	834	16,750	U	71	38	16,419	17,717	49	46
S.C.	754	842	11,983	U	12	8	10,969	10,936	37	33
Ga.	1,604	2,305	12,075	11,595	41	-	14,010	17,468	U	-
Fla.	5,717	7,064	22,877	21,720	45	29	16,527	16,745	113	86
E.S. CENTRAL	1,908	2,130	30,676	31,411	94	39	30,853	34,865	322	565
Ky.	338	363	6,042	6,466	30	-	3,854	4,083	13	29
Tenn.	745	781	12,079	12,730	46	39	10,617	11,393	226	389
Ala.	512	570	8,283	8,031	14	-	11,525	12,913	11	8
Miss.	313	416	4,272	4,184	4	-	4,857	6,476	72	139
W.S. CENTRAL	5,663	6,353	55,763	55,167	69	17	36,810	36,914	466	383
Ark.	216	267	2,117	1,643	9	5	3,519	3,763	11	8
La.	997	1,421	9,738	7,089	7	3	9,562	7,713	219	227
Okla.	275	245	7,110	7,080	11	6	4,575	4,675	7	1
Tex.	4,175	4,420	36,798	39,355	42	3	19,154	20,763	229	147
MOUNTAIN	1,527	1,830	22,394	25,323	237	138	7,847	7,226	468	536
Mont.	41	34	1,044	1,193	24	-	47	34	21	18
Idaho	50	37	1,592	1,480	36	23	153	94	81	97
Wyo.	14	7	605	596	17	12	51	40	226	173
Colo.	352	462	1,896	3,680	83	57	2,103	1,335	38	63
N. Mex.	163	154	3,159	3,776	7	6	1,102	868	56	72
Ariz.	374	535	10,550	10,339	N	30	3,596	3,581	25	73
Utah	134	176	1,667	1,491	59	-	264	272	5	19
Nev.	399	425	1,881	2,768	11	10	531	1,002	16	21
PACIFIC	7,542	10,405	73,742	69,065	380	330	17,161	20,585	443	729
Wash.	617	638	8,993	9,004	118	131	1,846	1,964	27	50
Oreg.	286	438	4,827	5,144	80	93	707	830	3	8
Calif.	6,510	9,128	56,802	51,927	170	94	13,777	16,904	260	462
Alaska	40	30	1,457	1,260	12	3	361	431	-	3
Hawaii	89	171	1,663	1,730	N	9	470	456	153	206
Guam	2	4	193	353	N	-	27	61	-	6
P.R.	1,975	2,166	U	U	41	U	524	619	144	148
V.I.	95	18	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	1	-	N	N	N	U	17	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 November 25, 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 December 13, 1997, and December 14, 1996 (50th 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	983	1,063	10,225	14,730	1,705	1,575	7,519	10,970	16,407	18,654	7,500
NEW ENGLAND	79	77	2,829	3,990	96	75	124	183	427	408	1,196
Maine	2	5	8	54	1	10	2	1	11	20	218
N.H.	7	4	38	46	10	3	-	1	15	15	43
Vt.	13	5	8	24	2	8	-	-	5	1	113
Mass.	27	32	358	265	30	26	64	80	250	210	271
R.I.	13	31	400	518	11	10	2	4	33	30	38
Conn.	17	N	2,017	3,083	42	18	56	97	113	132	513
MID. ATLANTIC	213	233	6,019	9,129	430	444	348	495	2,997	3,464	1,595
Upstate N.Y.	71	75	2,389	4,247	70	83	38	71	424	423	1,154
N.Y. City	12	19	117	398	249	262	83	133	1,541	1,772	U
N.J.	20	14	1,510	2,004	78	67	119	172	641	725	183
Pa.	110	125	2,003	2,480	33	32	108	119	391	544	258
E.N. CENTRAL	292	346	93	409	132	165	640	1,546	1,543	1,899	176
Ohio	121	111	58	30	19	13	202	578	243	292	115
Ind.	53	50	29	30	16	15	148	202	148	182	13
Ill.	14	35	6	10	39	81	70	418	735	960	20
Mich.	89	105	-	20	43	40	128	176	299	368	28
Wis.	15	45	U	319	15	16	92	172	118	97	-
W.N. CENTRAL	69	63	148	213	66	43	174	332	541	477	475
Minn.	3	10	112	106	36	19	22	41	141	114	59
Iowa	12	11	9	18	10	3	8	23	66	67	154
Mo.	30	18	20	49	11	10	107	222	227	185	25
N. Dak.	2	-	-	1	3	1	-	-	12	8	79
S. Dak.	2	3	1	-	1	-	1	-	19	17	74
Nebr.	15	16	2	5	1	3	7	10	17	21	2
Kans.	5	5	4	34	4	7	29	36	59	65	82
S. ATLANTIC	126	161	750	687	346	296	3,066	3,663	3,167	3,397	2,983
Del.	12	12	105	173	5	4	20	35	18	38	54
Md.	27	36	474	341	85	85	864	690	305	279	579
D.C.	4	7	9	3	20	8	106	122	97	127	5
Va.	27	37	62	52	66	57	225	377	305	293	656
W. Va.	N	N	10	12	1	6	3	9	51	53	87
N.C.	14	12	34	65	20	30	696	1,029	429	507	852
S.C.	8	7	2	9	18	12	348	384	260	339	175
Ga.	1	3	7	1	50	27	516	663	595	604	311
Fla.	32	47	47	31	81	67	288	354	1,107	1,157	264
E.S. CENTRAL	49	54	75	79	34	41	1,554	2,350	1,170	1,297	267
Ky.	8	10	10	26	8	11	129	151	175	227	27
Tenn.	33	22	40	21	10	14	710	822	357	436	148
Ala.	4	5	11	8	10	8	398	516	402	405	87
Miss.	4	17	14	24	6	8	317	861	236	229	5
W.S. CENTRAL	36	24	94	118	57	70	1,123	1,715	2,337	2,361	323
Ark.	-	1	25	22	5	2	128	234	171	197	54
La.	6	2	5	8	16	8	351	476	265	241	5
Okla.	7	11	29	24	8	-	116	170	168	166	109
Tex.	23	10	35	64	28	60	528	835	1,733	1,757	155
MOUNTAIN	62	55	23	8	65	58	179	147	457	628	187
Mont.	1	1	-	-	2	7	-	-	17	19	49
Idaho	2	-	4	1	-	-	1	4	15	10	-
Wyo.	1	7	5	3	2	7	-	2	2	6	31
Colo.	17	11	6	-	30	24	14	24	75	103	28
N. Mex.	3	2	1	1	8	2	16	7	53	84	12
Ariz.	12	21	4	-	11	7	134	88	218	231	53
Utah	19	6	1	1	3	5	5	3	31	51	6
Nev.	7	7	2	2	9	6	9	19	46	124	8
PACIFIC	57	50	194	97	479	383	311	539	3,768	4,723	298
Wash.	9	6	10	18	49	22	10	9	249	273	-
Oreg.	-	-	21	19	24	24	9	9	138	180	14
Calif.	47	38	161	59	393	323	290	517	3,166	4,005	260
Alaska	-	1	2	-	5	3	1	-	71	69	24
Hawaii	1	5	-	1	8	11	1	4	144	196	-
Guam	-	1	-	-	-	-	3	3	13	93	-
P.R.	-	-	-	-	6	2	232	206	212	182	64
V.I.	-	1	-	-	-	1	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	9	1	2	-	-

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

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending December 13, 1997, and December 14, 1996 (50th 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	996	989	26,585	27,875	8,357	9,470	1	73	-	55	128	494
NEW ENGLAND	60	39	606	413	146	217	-	11	-	8	19	16
Maine	5	-	59	24	6	2	-	-	-	1	1	-
N.H.	10	12	34	21	17	18	-	1	-	-	1	-
Vt.	3	2	14	12	7	13	-	-	-	-	-	2
Mass.	37	23	239	199	55	90	-	10	-	6	16	12
R.I.	3	2	129	22	16	12	-	-	-	-	-	-
Conn.	2	-	131	135	45	82	-	-	-	1	1	2
MID. ATLANTIC	139	203	1,792	1,865	1,245	1,337	1	19	-	8	27	37
Upstate N.Y.	37	47	341	419	296	323	-	2	-	3	5	11
N.Y. City	35	55	669	594	424	474	1	9	-	2	11	11
N.J.	47	61	246	349	201	268	-	3	-	-	3	3
Pa.	20	40	536	503	324	272	-	5	-	3	8	12
E.N. CENTRAL	155	174	2,726	2,495	890	1,044	-	6	-	3	9	21
Ohio	83	88	305	734	88	117	-	-	-	-	-	6
Ind.	18	14	314	358	92	135	-	-	-	-	-	-
Ill.	37	48	679	727	220	326	-	6	-	1	7	3
Mich.	15	11	1,283	488	445	379	-	-	-	2	2	3
Wis.	2	13	145	188	45	87	-	-	-	-	-	9
W.N. CENTRAL	61	46	2,077	2,487	444	531	-	12	-	5	17	23
Minn.	44	31	191	139	42	68	-	3	-	5	8	18
Iowa	7	4	466	315	45	74	-	-	-	-	-	1
Mo.	6	8	1,043	1,335	303	314	-	1	-	-	1	3
N. Dak.	-	-	10	138	5	2	-	-	-	-	-	-
S. Dak.	2	1	23	42	1	5	-	8	-	-	8	-
Nebr.	1	1	96	144	15	38	-	-	-	-	-	-
Kans.	1	1	248	374	33	30	-	-	-	-	-	1
S. ATLANTIC	168	187	2,058	1,337	1,225	1,278	-	2	-	13	15	11
Del.	-	2	31	21	6	9	-	-	-	-	-	1
Md.	58	61	207	241	178	163	-	-	-	2	2	2
D.C.	-	5	36	36	30	32	-	-	-	1	1	-
Va.	13	10	221	184	124	137	-	-	-	1	1	3
W. Va.	4	10	11	18	16	32	-	-	-	-	-	-
N.C.	21	25	200	176	251	324	-	-	-	2	2	2
S.C.	4	5	108	56	96	97	-	-	-	1	1	-
Ga.	39	35	651	153	139	32	-	-	-	1	1	2
Fla.	29	34	593	452	385	452	-	2	-	5	7	1
E.S. CENTRAL	45	26	589	1,220	661	863	-	-	-	-	-	2
Ky.	6	6	69	53	37	75	-	-	-	-	-	-
Tenn.	25	10	370	753	430	485	-	-	-	-	-	2
Ala.	14	9	82	204	74	74	-	-	-	-	-	-
Miss.	-	1	68	210	120	229	-	-	-	-	-	-
W.S. CENTRAL	51	41	5,455	5,680	1,166	1,198	-	3	-	5	8	26
Ark.	1	-	211	459	59	79	U	-	U	-	-	-
La.	13	5	228	213	164	151	-	-	-	-	-	-
Okla.	32	31	1,396	2,380	50	24	-	-	-	1	1	-
Tex.	5	5	3,620	2,628	893	944	U	3	U	4	7	26
MOUNTAIN	91	53	4,143	4,309	863	1,112	-	6	-	2	8	157
Mont.	-	1	71	113	12	17	-	-	-	-	-	-
Idaho	1	1	138	238	53	86	-	-	-	-	-	1
Wyo.	4	-	40	39	40	44	-	-	-	-	-	1
Colo.	18	15	399	490	153	124	-	-	-	-	-	7
N. Mex.	10	10	347	345	247	407	-	-	-	-	-	17
Ariz.	32	18	2,207	1,635	194	224	-	5	-	-	5	8
Utah	3	8	534	1,026	92	118	-	-	-	1	1	118
Nev.	23	-	407	423	72	92	-	1	-	1	2	5
PACIFIC	226	220	7,139	8,069	1,717	1,890	-	14	-	11	25	201
Wash.	5	4	616	725	74	110	-	1	-	1	2	38
Oreg.	34	33	364	854	106	128	-	-	-	-	-	14
Calif.	173	175	5,992	6,333	1,505	1,624	-	11	-	8	19	46
Alaska	7	6	33	49	21	16	-	-	-	-	-	63
Hawaii	7	2	134	108	11	12	-	2	-	2	4	40
Guam	-	-	-	7	3	1	U	-	U	-	-	-
P.R.	-	2	255	243	1,347	990	-	-	-	-	-	3
V.I.	-	-	-	36	-	41	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	6	10	1	1	34	5	U	1	U	-	1	-

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

*Of 227 cases among children aged <5 years, serotype was reported for 120 and of those, 49 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 December 13, 1997, and December 14, 1996 (50th 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	2,972	3,136	7	581	679	97	5,060	6,737	-	158	229
NEW ENGLAND	188	146	-	12	1	10	888	1,669	-	1	27
Maine	18	13	-	-	-	-	7	52	-	-	-
N.H.	16	10	-	1	-	-	126	177	-	-	-
Vt.	4	4	-	-	-	2	238	238	-	-	2
Mass.	93	61	-	4	1	6	471	1,135	-	1	21
R.I.	20	15	-	6	-	1	17	32	-	-	-
Conn.	37	43	-	1	-	1	29	35	-	-	4
MID. ATLANTIC	311	339	-	55	87	9	365	714	-	31	13
Upstate N.Y.	69	86	-	11	25	-	135	447	-	4	5
N.Y. City	45	51	-	3	18	3	62	56	-	27	5
N.J.	69	74	-	6	4	-	9	31	-	-	2
Pa.	128	128	-	35	40	6	159	180	-	-	1
E.N. CENTRAL	435	437	5	80	125	11	484	749	-	5	3
Ohio	158	148	1	35	43	1	159	272	-	-	-
Ind.	53	58	-	14	8	-	69	93	-	-	-
Ill.	140	132	-	13	23	5	113	165	-	2	1
Mich.	50	45	4	15	48	5	60	54	-	-	2
Wis.	34	54	-	3	3	-	83	165	-	3	-
W.N. CENTRAL	218	237	-	18	22	4	508	431	-	-	-
Minn.	34	31	-	6	6	1	307	333	-	-	-
Iowa	47	53	-	10	3	1	103	21	-	-	-
Mo.	95	89	-	-	10	2	64	50	-	-	-
N. Dak.	2	5	-	-	2	-	2	1	-	-	-
S. Dak.	5	10	-	-	-	-	5	4	-	-	-
Nebr.	14	23	-	2	-	-	14	9	-	-	-
Kans.	21	26	-	-	1	-	13	13	-	-	-
S. ATLANTIC	539	596	2	85	109	9	431	683	-	83	98
Del.	5	2	-	-	-	-	1	26	-	-	-
Md.	42	56	1	10	36	1	119	266	-	-	-
D.C.	9	5	-	-	-	-	3	3	-	1	1
Va.	58	61	1	19	16	4	56	99	-	1	2
W. Va.	18	17	-	-	-	-	6	6	-	-	-
N.C.	88	75	-	12	21	-	118	129	-	59	84
S.C.	58	64	-	11	7	1	30	48	-	19	1
Ga.	105	132	-	10	3	-	13	20	-	-	-
Fla.	156	184	-	23	26	3	85	86	-	3	10
E.S. CENTRAL	224	229	-	27	22	-	137	197	-	-	2
Ky.	46	29	-	3	-	-	58	142	-	-	-
Tenn.	82	60	-	6	1	-	38	21	-	-	-
Ala.	77	88	-	9	6	-	33	25	-	-	2
Miss.	19	52	-	9	15	-	8	9	-	-	N
W.S. CENTRAL	276	318	-	62	57	-	248	155	-	4	8
Ark.	32	34	U	1	1	U	60	8	U	-	-
La.	47	59	-	16	18	-	20	11	-	-	1
Okla.	42	41	-	-	1	-	48	19	-	-	-
Tex.	155	184	U	45	37	U	120	117	U	4	7
MOUNTAIN	175	180	-	55	24	34	1,170	596	-	7	7
Mont.	9	9	-	-	-	-	19	36	-	-	-
Idaho	11	24	-	3	-	11	597	108	-	2	2
Wyo.	4	4	-	1	1	-	7	8	-	-	-
Colo.	46	43	-	3	4	5	311	286	-	-	3
N. Mex.	28	27	N	N	N	11	143	62	-	-	-
Ariz.	44	37	-	33	1	-	36	32	-	5	1
Utah	15	17	-	8	3	-	24	23	-	-	-
Nev.	18	19	-	7	15	7	33	41	-	-	1
PACIFIC	606	654	-	187	232	20	829	1,543	-	27	71
Wash.	86	97	-	19	21	20	398	717	-	5	15
Oreg.	124	118	N	N	N	-	10	63	-	-	1
Calif.	387	424	-	141	178	-	393	726	-	14	52
Alaska	2	9	-	4	3	-	14	3	-	-	-
Hawaii	7	6	-	23	30	-	14	34	-	8	3
Guam	1	4	U	1	10	U	-	-	U	-	-
P.R.	10	12	-	7	2	-	2	3	-	-	-
V.I.	-	-	U	-	2	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	4	-	U	-	-	U	-	-

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

TABLE IV. Deaths in 122 U.S. cities,* week ending December 13, 1997 (50th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	595	425	106	38	11	15	41
Boston, Mass.	151	93	32	14	4	8	17
Bridgeport, Conn.	49	34	11	3	-	1	2
Cambridge, Mass.	12	9	2	1	-	-	2
Fall River, Mass.	27	25	2	-	-	-	-
Hartford, Conn.	64	39	14	7	3	1	2
Lowell, Mass.	21	17	2	1	-	1	-
Lynn, Mass.	18	15	3	-	-	-	-
New Bedford, Mass.	21	17	3	1	-	-	1
New Haven, Conn.	34	25	5	3	1	-	1
Providence, R.I.	58	43	10	3	1	1	3
Somerville, Mass.	3	3	-	-	-	-	-
Springfield, Mass.	50	38	7	4	1	-	2
Waterbury, Conn.	32	24	8	-	-	-	2
Worcester, Mass.	55	43	7	1	1	3	9
MID. ATLANTIC	2,460	1,698	491	191	42	38	129
Albany, N.Y.	47	35	5	5	1	1	-
Allentown, Pa.	21	16	5	-	-	-	-
Buffalo, N.Y.	66	51	10	3	1	1	4
Camden, N.J.	26	15	5	4	1	1	4
Elizabeth, N.J.	22	15	4	2	1	-	1
Erie, Pa.	44	30	11	2	1	-	-
Jersey City, N.J.	57	30	21	4	-	2	4
New York City, N.Y.	1,266	870	252	110	18	16	61
Newark, N.J.	55	31	13	7	2	2	3
Paterson, N.J.	41	34	2	1	2	2	2
Philadelphia, Pa.	400	258	81	34	15	12	24
Pittsburgh, Pa.§	46	33	11	2	-	-	1
Reading, Pa.	31	25	3	3	-	-	4
Rochester, N.Y.	123	93	23	7	-	-	7
Schenectady, N.Y.	24	20	3	-	-	1	1
Scranton, Pa.	20	17	2	1	-	-	2
Syracuse, N.Y.	126	94	28	4	-	-	10
Trenton, N.J.	29	19	8	2	-	-	1
Utica, N.Y.	16	12	4	-	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,208	1,487	404	153	77	84	139
Akron, Ohio	46	28	12	4	-	1	1
Canton, Ohio	43	34	6	3	-	-	3
Chicago, Ill.	512	274	108	44	28	56	35
Cincinnati, Ohio	132	94	23	6	5	4	14
Cleveland, Ohio	158	114	32	10	1	1	6
Columbus, Ohio	190	124	42	14	4	6	12
Dayton, Ohio	102	67	23	9	2	1	9
Detroit, Mich.	187	117	39	21	5	5	13
Evansville, Ind.	57	44	7	5	1	-	4
Fort Wayne, Ind.	81	59	13	4	5	-	5
Gary, Ind.	8	5	2	1	-	-	-
Grand Rapids, Mich.	68	55	9	-	2	2	8
Indianapolis, Ind.	200	144	23	13	15	5	-
Lansing, Mich.	41	29	11	-	1	-	3
Milwaukee, Wis.	130	97	25	4	4	-	13
Peoria, Ill.	U	U	U	U	U	U	U
Rockford, Ill.	48	39	6	2	1	-	4
South Bend, Ind.	46	39	3	3	-	1	-
Toledo, Ohio	95	73	13	5	3	1	8
Youngstown, Ohio	64	51	7	5	-	1	1
W.N. CENTRAL	846	601	124	68	20	20	54
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	38	32	3	2	-	1	2
Kansas City, Kans.	51	35	11	3	2	-	2
Kansas City, Mo.	91	49	16	10	2	1	5
Lincoln, Nebr.	33	26	3	4	-	-	3
Minneapolis, Minn.	209	155	32	14	3	5	15
Omaha, Nebr.	118	86	14	10	5	3	10
St. Louis, Mo.	122	83	23	7	6	3	10
St. Paul, Minn.	84	66	11	5	-	2	5
Wichita, Kans.	100	69	11	13	2	5	2
S. ATLANTIC	1,431	940	291	129	39	30	92
Atlanta, Ga.	193	127	45	14	4	3	10
Baltimore, Md.	317	195	73	37	6	6	33
Charlotte, N.C.	85	61	14	6	2	1	10
Jacksonville, Fla.	133	99	17	9	2	6	2
Miami, Fla.	107	61	24	15	5	2	1
Norfolk, Va.	51	32	13	3	2	1	4
Richmond, Va.	76	48	16	8	4	-	1
Savannah, Ga.	64	44	14	4	1	1	5
St. Petersburg, Fla.	74	56	10	5	3	-	9
Tampa, Fla.	207	148	34	15	2	7	13
Washington, D.C.	99	54	25	12	5	3	4
Wilmington, Del.	25	15	6	1	3	-	-
E.S. CENTRAL	941	642	188	67	22	21	57
Birmingham, Ala.	213	158	41	9	2	2	19
Chattanooga, Tenn.	87	62	17	5	3	-	6
Knoxville, Tenn.	86	58	19	6	2	1	8
Lexington, Ky.	71	52	13	4	-	2	4
Memphis, Tenn.	162	107	25	18	7	5	12
Mobile, Ala.	128	89	25	9	2	3	-
Montgomery, Ala.	50	31	12	3	1	3	-
Nashville, Tenn.	144	85	36	13	5	5	8
W.S. CENTRAL	1,493	959	323	147	42	22	117
Austin, Tex.	79	59	9	8	3	-	5
Baton Rouge, La.	48	27	15	5	1	-	1
Corpus Christi, Tex.	69	50	10	6	2	1	7
Dallas, Tex.	224	139	44	30	8	3	11
El Paso, Tex.	96	62	25	7	1	1	9
Ft. Worth, Tex.	U	U	U	U	U	U	U
Houston, Tex.	390	221	104	46	11	8	36
Little Rock, Ark.	76	48	16	7	4	1	1
New Orleans, La.	62	32	15	9	4	2	-
San Antonio, Tex.	235	173	42	12	4	4	21
Shreveport, La.	62	41	15	4	2	-	4
Tulsa, Okla.	152	107	28	13	2	2	22
MOUNTAIN	794	569	120	64	21	20	52
Albuquerque, N.M.	101	70	9	14	5	3	4
Boise, Idaho	37	29	5	2	1	-	6
Colo. Springs, Colo.	72	52	12	4	-	4	5
Denver, Colo.	102	72	17	8	2	3	6
Las Vegas, Nev.	184	126	40	12	3	3	9
Ogden, Utah	22	16	2	1	1	2	-
Phoenix, Ariz.	U	U	U	U	U	U	U
Pueblo, Colo.	29	23	2	2	1	1	4
Salt Lake City, Utah	102	80	10	5	5	2	8
Tucson, Ariz.	145	101	23	16	3	2	10
PACIFIC	1,395	976	258	99	29	31	127
Berkeley, Calif.	21	18	2	-	-	1	1
Fresno, Calif.	118	82	24	6	4	2	4
Glendale, Calif.	U	U	U	U	U	U	U
Honolulu, Hawaii	71	58	8	4	-	1	8
Long Beach, Calif.	97	67	22	4	3	1	14
Los Angeles, Calif.	U	U	U	U	U	U	U
Pasadena, Calif.	31	24	3	2	-	2	-
Portland, Oreg.	U	U	U	U	U	U	U
Sacramento, Calif.	235	163	38	22	6	6	34
San Diego, Calif.	163	103	38	15	1	5	17
San Francisco, Calif.	151	90	33	19	3	5	14
San Jose, Calif.	197	141	41	8	4	3	19
Santa Cruz, Calif.	20	13	5	2	-	-	2
Seattle, Wash.	131	92	24	8	3	4	4
Spokane, Wash.	59	47	10	1	1	-	3
Tacoma, Wash.	101	78	10	8	4	1	7
TOTAL	12,163¶	8,297	2,305	956	303	281	808

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.

State Support Team

Robert Fagan
Karl A. Brendel
Siobhan Gilchrist, M.P.H.
Harry Holden
Gerald Jones
Felicia Perry
Carol A. Worsham

CDC Operations Team

Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Christine R. Burgess
Patsy A. Hall
Myra A. Montalbano
Angela Trosclair, M.S.

Desktop Publishing and Graphics Support

Morie M. Higgins
Peter M. Jenkins

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