



# MMWR

## Morbidity and Mortality Weekly Report

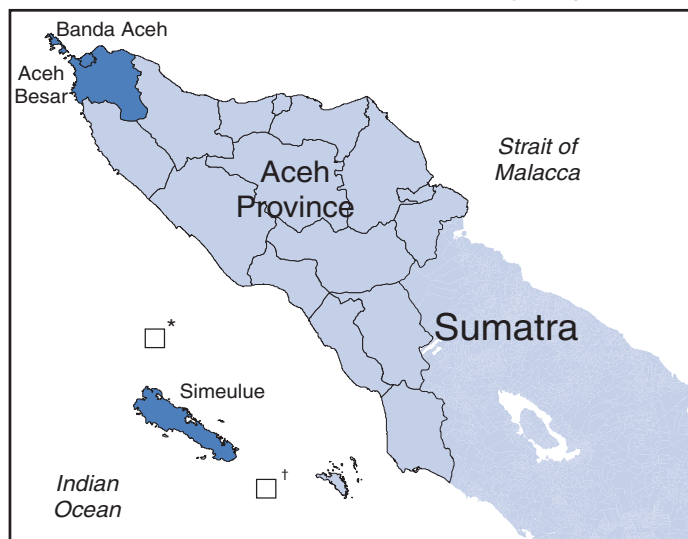
Weekly

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### Assessment of Health-Related Needs After Tsunami and Earthquake — Three Districts, Aceh Province, Indonesia, July–August 2005

On December 26, 2004, an earthquake measuring 9.2 on the Richter scale off the northwest coast of the island of Sumatra, Indonesia, produced a tsunami that caused the deaths of an estimated 230,000 persons in India, Indonesia, the Maldives, Somalia, Sri Lanka, and Thailand (1). The majority of casualties were in Aceh Province (population 4.5 million) in northern Sumatra, Indonesia, where an estimated 130,000 persons died. In addition, 500,000 persons were displaced from their homes, and 37,000 remain unaccounted for in the province. In the Aceh Province districts of Banda Aceh and Aceh Besar, an estimated 90,000 persons died (2); approximately 75% of health workers in Banda Aceh either died or were displaced from their homes (3). On March 28, 2005, a second major earthquake, measuring 8.7 on the Richter scale, caused large-scale damage to the islands of Simeulue and Nias off the western Sumatra coast; approximately 300 persons died, and thousands were displaced (4). The international community responded to these events with the largest relief measures ever undertaken for a natural disaster (5). To determine the health and nutrition status of the affected populations and to evaluate the effectiveness of relief interventions 7 months after the tsunami and 3 months after the second earthquake, Cooperative for Assistance and Relief Everywhere, Inc. (CARE) International Indonesia and CDC conducted surveys in three districts of Aceh Province (Aceh Besar, Banda Aceh, and Simeulue) (Figure). This report summarizes the results of those surveys, which identified routine vaccinations and provision of toilets or latrines as particular areas for improvement and revealed no significant difference in health indicators between internally displaced persons (IDPs) and nondisplaced populations. The relief response in Aceh Province should target areas needing improvement with programs that serve both IDPs and nondisplaced persons, as measures are implemented to rebuild the public health infrastructure.

FIGURE. Three surveyed districts affected by tsunami and/or earthquake — Aceh Province, Indonesia, July–August 2005



\* Approximate epicenter of December 26, 2004, earthquake (magnitude 9.2) that produced a tsunami.

† Approximate epicenter of March 28, 2005, earthquake (magnitude 8.7).

Three separate, two-stage, random-cluster surveys (6) were conducted during July–August 2005 among households in the three districts. Both Aceh Besar (estimated 2005

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#### Notifiable Disease Morbidity and 122 Cities Mortality Data

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population: 295,000) and Banda Aceh (178,000) were severely affected by the first earthquake and tsunami; Simeulue (78,000) was affected primarily by the second earthquake (2). Interviewers used hand-held computers to administer questionnaires, and informed consent was obtained from all participants. The height and weight of children aged 6–59 months were measured; finger-stick blood samples for evaluation of anemia and malaria and stool samples were obtained for detection of soil-transmitted helminths were obtained from every second child aged 6–59 months. Among children in this age group, 17% did not complete anthropometric and laboratory assessment. Differences in proportions between IDPs and nondisplaced persons were tested using chi-square tests with a statistical significance level of  $p < 0.05$ ; confidence intervals were calculated using statistical software to accommodate the complex sampling design.

A total of 2,751 households were in the initial sampling; residents of 101 (3.7%) households either refused to participate or did not complete the questionnaire, leaving 2,650 households in the three surveys. Average household size was 5.2 persons. Of 13,712 persons in the households surveyed, 51.4% were male and 11.3% were children aged <5 years.

At the time of the survey, the highest proportion of displaced households was in Simeulue (32.3%), followed by Aceh Besar (22.4%) and Banda Aceh (15.8%) (Table 1). Interviewed IDPs either were housed in camps or had found shelter with other families. Persons in an additional 46% of households in the three districts had been temporarily displaced but had returned to their residences.

The highest proportion of households with partial or complete damage to homes was in Simeulue, where 82.3% of homes were affected, followed by 61.8% in Banda Aceh and 47.3% in Aceh Besar (Table 1). Limited numbers of households with damaged homes had received building materials for reconstruction (11.4% in Aceh Besar, 3.1% in Banda Aceh, and 2.4% in Simeulue). Plastic sheeting for temporary shelter had been received by 82.5% of households with damaged houses in Simeulue, 27.7% in Aceh Besar, and 20.9% in Banda Aceh.

Food assistance (e.g., rice, noodles, fish, and oil) had been received by 90.4% of households in Simeulue, 62.2% in Banda Aceh, and 41.6% in Aceh Besar. Among children aged 12–59 months, distribution of micronutrient supplements was highest in Simeulue (60.8% among IDPs and 53.2% among nondisplaced children), lowest in Banda Aceh (25.0% among IDPs and 15.1% among nondisplaced children), and significantly lower among nondisplaced children (22.7%) than IDPs (55.9%) in Aceh Besar (Table 2). Among children aged 6–59 months, global acute malnutrition (GAM) (7) ranged from

**TABLE 1. Selected characteristics of households affected by tsunami\* and/or earthquake,† by district — Aceh Province, Indonesia, July–August 2005**

Characteristic	Aceh Besar		Banda Aceh		Simeulue	
	%	(95% CI <sup>§</sup> )	%	(95% CI)	%	(95% CI)
<b>Housing</b>	n = 860		n = 887		n = 903	
Partial or complete damage to home	47.3	(35.3–59.5)	61.8	(47.3–74.5)	82.3	(76.3–87.1)
Current displacement from home	22.4	(13.0–35.8)	15.8	(8.7–26.9)	32.3	(22.9–43.5)
<b>Assistance received</b>						
Food	41.6	(28.2–56.3)	62.2	(50.4–72.6)	90.4	(86.0–93.6)
Money	31.5	(20.1–45.8)	45.4	(34.6–57.0)	97.0	(94.2–98.5)
<b>Materials received<sup>¶</sup></b>	n = 361		n = 492		n = 741	
Building material	11.4	(5.2–23.2)	3.1	(0.6–13.8)	2.3	(1.3–4.1)
Plastic sheeting	27.7	(18.3–39.6)	20.9	(11.8–34.5)	82.5	(74.3–88.5)

\* December 26, 2004.

† March 28, 2005.

§ Confidence interval.

¶ Among households reporting partial or complete damage to home.

**TABLE 2. Health interventions, health indicators, and environmental health factors among populations affected by tsunami\* and/or earthquake,† by district — Aceh Province, Indonesia, July–August 2005**

Category	Aceh Besar		Banda Aceh		Simeulue	
	Nondisplaced persons		Nondisplaced persons		Nondisplaced persons	
	IDPs <sup>§</sup>		IDPs		IDPs	
	%	(95% CI <sup>¶</sup> )	%	(95% CI)	%	(95% CI)
<b>Health interventions (children aged 12–59 mos)</b>	n = 67		n = 323		n = 39	
Measles vaccination	37.3	(22.4–55.1)	40.7	(31.3–51.0)	43.6	(30.0–58.2)
Vitamin A capsules**	62.7	(47.0–76.2)	54.4	(45.2–63.3)	52.6	(39.8–65.2)
Micronutrient supplements**	55.9	(34.2–75.6)	22.7	(11.7–39.4)	25.0	(12.6–43.6)
Growth monitoring during preceding 3 months	50.0	(35.6–64.4)	54.4	(43.9–64.4)	42.2	(24.9–61.7)
<b>Health indicators (children aged 6–59 mos)</b>	n = 72		n = 326		n = 192	
Global acute malnutrition <sup>††</sup>	8.3	(3.8–17.2)	8.9	(6.2–12.6)	12.8	(5.1–28.6)
Severe acute malnutrition <sup>††</sup>	0		1.5	(0.7–3.5)	0	
Anemia (mild or moderate) <sup>§§</sup>	45.8	(19.8–74.3)	31.8	(21.5–44.2)	50.0	(30.8–69.2)
Helminths infection <sup>§§</sup>	33.3	(11.9–64.9)	51.3	(38.2–64.2)	18.2	(5.3–46.8)
<b>Environmental health factors (households)</b>	n = 193		n = 663		n = 140	
Access to protected water source	76.7	(54.0–90.2)	30.5	(18.6–46.7)	80.0	(68.2–88.1)
Water source ≤500 m from home	97.3	(93.3–98.9)	93.0	(85.0–96.8)	88.9	(81.0–93.8)
Boil drinking water (excluding bottled water)	79.2	(66.0–88.3)	93.9	(89.7–96.5)	81.2	(74.2–86.6)
Toilets or latrines	85.0	(61.5–95.2)	74.4	(63.2–84.0)	98.6	(95.1–99.6)
Bed net usage	80.8	(66.3–90.0)	52.2	(40.6–63.7)	36.7	(25.8–49.1)
Indoor residual spraying after tsunami	37.3	(16.3–63.5)	57.7	(44.8–69.5)	13.2	(7.7–21.9)

\* December 26, 2004.

† March 28, 2005.

§ Internally displaced persons.

¶ Confidence interval.

\*\* Received after tsunami or earthquake.

†† As defined by the World Health Organization.

§§ Every second child was assessed for anemia and helminths infection.

7.8% among nondisplaced children in Banda Aceh to 17.6% among IDPs in Simeulue. Severe acute malnutrition (SAM) was highest in Simeulue (3.4% among IDPs and 1.9% among nondisplaced children) (Table 2). GAM was not significantly higher among IDPs in the three districts, and no association was observed between food aid distribution and GAM.

A measles vaccination campaign targeted all children aged 6 months–15 years. Among eligible children aged 12–59 months, the percentage receiving measles vaccination ranged from 37.3% of IDPs in Aceh Besar to 58.2% of nondisplaced children in Banda Aceh (Table 2). Among children in this age group, the key point of contact for Indonesian public health services, including routine vaccination, is a monthly growth-monitoring service called the Posyandu. Approximately half of all children surveyed in this age group had been evaluated by the Posyandu during the preceding 3 months.

In the three districts, mild or moderate anemia among children aged 6–59 months ranged from 31.8% to 64.5% (Table 2). The prevalence of anemia among IDPs did not differ significantly from that of nondisplaced children. Soil-transmitted helminth infections, primarily ascariasis and trichuriasis, were common among children in Aceh Besar and Simeulue, where approximately 75% of school-aged children and half of children aged 6–59 months were infected. Prevalence of helminth infection was significantly lower ( $p<0.05$ ) among children in Banda Aceh than among children in the other two districts.

Nearly 80% of displaced households in urban Banda Aceh and Aceh Besar had access to a protected source of drinking water (i.e., bottled, municipal tap, tanker-delivered, or deep borehole). By contrast, in Simeulue, a rural district that is poorer and more isolated, 18% had access to a protected water source, with most families collecting water from shallow wells or surface-water sources. Access to a protected water source was significantly higher ( $p<0.05$ ) among IDPs (76.7%) than among nondisplaced persons (30.5%) in Aceh Besar (Table 2). Overall, boiling of drinking water was reported by 84% of households, regardless of the water source. However, 40% of samples of stored drinking water (21.3% in Banda Aceh, 45.7% in Aceh Besar, and 52.5% in Simeulue) tested positive for *Escherichia coli*, suggesting poor water handling and storage practices. Among households in Aceh Besar and Banda Aceh, respectively, 77% and 98% had access to toilets or latrines. However, in Simeulue, access to toilets or latrines remained limited (45.5% among IDP households and 60.1% among nondisplaced households).

Approximately 93% of households in Simeulue used bed nets as protection from mosquitoes, compared with approximately 36% of households in urban Banda Aceh (Table 2). In Aceh Besar, use of bed nets was significantly higher ( $p<0.05$ )

among IDP households (80.8%) than among nondisplaced households (52.2%). Indoor residual spraying for mosquitoes also was higher among IDP households (65.3%) in Simeulue but lower among IDP households (13.2%) in Banda Aceh.

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**Editorial Note:** Before the December 2004 tsunami, Aceh Province was isolated by ongoing civil conflict. After the tsunami, unprecedented measures by local and international agencies were taken to provide temporary shelter, food, and drinking water. An early warning disease surveillance system was implemented, and a mass measles vaccination campaign, together with administration of vitamin A, was initiated as a collaborative program of the Indonesian government, World Health Organization (WHO), UNICEF, and other nongovernmental organizations (8). No large disease outbreaks were reported during the relief period, and mortality from disease was low.

The surveys and measurements described in this report, conducted 7 months after the tsunami and 3 months after the second earthquake, observed levels of malnutrition similar to those identified by earlier surveys conducted in the same districts during February–March 2005 (UNICEF, unpublished data, 2005), suggesting food conditions were stable. Malnutrition levels were below the WHO emergency threshold for GAM of 15% (7) in Banda Aceh and Aceh Besar but were elevated in Simeulue. However, this finding might reflect high rates of malnutrition in Simeulue before the earthquake. The results also indicate that food and drinking water were provided to the majority of the population, although improvements to prevent contamination of drinking water were needed.

Despite these successes, substantial gaps in the relief program remained. Both measles vaccination coverage and micronutrient supplement coverage were low. Access to basic sanitation was deficient in rural areas such as Simeulue. One half of children aged <5 years were anemic. Nearly one half of preschool children and three fourths of school-aged children were infected with soil-transmitted helminths in Aceh Besar and Simeulue. In general, health indicators were similar among IDPs and nondisplaced populations, warranting relief strategies that provide assistance to both populations in Aceh Province.

Data from these and other surveys in Aceh Province are being used to plan longer-term health and nutrition interventions. In Simeulue, for example, local government and

nongovernmental organizations are strengthening the growth-monitoring system. This will improve vaccination coverage, micronutrient supplementation, and access to feeding programs for malnourished children. Measles and deworming campaigns will be conducted in Aceh Province. These and other programs, such as construction of water and sanitation infrastructure, will benefit both IDPs and nondisplaced populations.

The findings in this report are subject to at least two limitations. First, results from the three districts might not be representative of all areas of Aceh Province affected by the tsunami and second earthquake. Second, because only limited data were available regarding the health and nutrition status of the populations in these districts before the tsunami, determining to what extent the findings on health indicators reflect underlying conditions or the effects of the disaster and subsequent displacement was not possible.

With improved access to formerly isolated areas of Aceh Province and recovery resources made available, expectations for the humanitarian response are high. In addition to rebuilding homes, an opportunity exists to rebuild the public health infrastructure in the province. Monitoring health and nutrition indicators can continue to ensure that standards for relief measures are met by international agencies and nongovernmental organizations.

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## Imported Vaccine-Associated Paralytic Poliomyelitis — United States, 2005

Paralytic poliomyelitis is rare in the United States because of the success of universal childhood immunization and the Global Polio Eradication Initiative. Poliovirus vaccine was introduced in the 1950s. Since then, the United States has eliminated indigenous wild poliovirus transmission, controlled imported wild poliovirus cases, and, through a vaccine policy change (i.e., from live, attenuated oral polio vaccine [OPV] to inactivated polio vaccine [IPV]), eliminated vaccine-associated paralytic polio (VAPP) cases. The most recent VAPP case occurred in 1999 (1). The primary risk for paralytic polio for U.S. residents is through travel to countries where polio remains endemic or where polio outbreaks are occurring. This report describes the first known occurrence of imported VAPP in an unvaccinated U.S. adult who traveled abroad, where she likely was exposed through contact with an infant recently vaccinated with OPV. This case highlights the previously unrecognized risk for paralytic polio among unvaccinated persons exposed to OPV during travel abroad.

In March 2005, an Arizona woman aged 22 years contracted paralytic polio while traveling in Central and South America. She arrived in Costa Rica on January 14, 2005, to participate in a university-sponsored study-abroad program. During her stay with a local family, she visited several tourist locations along the Pacific coast in Costa Rica, Panama, Nicaragua, and Guatemala. Her last trip before onset of illness was to an island territory of Colombia during February 25–28. On March 2, after she returned to the host family's home, she had fever and general malaise. During the next 24 hours, her symptoms worsened, and she began to have headache and neck and back pain. On March 6, she experienced acute leg weakness and was hospitalized locally and soon transferred to a hospital in San Jose, Costa Rica. On March 9, she was transported by air to Phoenix, Arizona, for further evaluation.

Upon admission to a hospital in Phoenix, the patient had bilateral areflexic lower extremity weakness and respiratory failure requiring intubation. Cerebrospinal fluid (CSF) studies on March 9 revealed lymphocytic pleocytosis, elevated protein (89 mg/dL), and normal glucose levels (53 mg/dL). The patient was initially treated for an acute peripheral demyelinating process, such as Guillain-Barre Syndrome (GBS), with corticosteroids and plasmapheresis. Electrodiagnostic studies, however, displayed reduced compound muscle action potentials, normal sensory nerve action potentials, and widespread denervation, consistent with a severe, asymmetric process

involving anterior horn cells or motor axons. Magnetic resonance imaging of the cervical and thoracic spine demonstrated signal abnormality in the anterior cord, indicative of anterior horn-cell involvement. Serologic results for antibodies specific for West Nile and dengue viruses were negative. Stool specimens were collected on March 20 and sent to the CDC polio reference laboratory. The specimens were positive for Sabin-strain poliovirus types 2 and 3; no other enteroviruses were identified. The results of serologic tests for all three serotypes were greater than 1:10 for both acute and convalescent specimens. During the course of hospitalization, the patient recovered respiratory function, was transferred to a rehabilitation center for physical and occupational therapy, and was eventually discharged home for outpatient therapy. Sixty days after the onset of weakness, she had residual weakness in both legs.

The patient had never been vaccinated with either OPV or IPV because of a religious exemption. The Costa Rican family with whom she lived consisted of a mother, father, and daughter with no young children. The host family's son and daughter-in-law lived next door with two children, aged 2 months and 3 years, who visited the host family frequently. The infant received his first dose of OPV on January 19, 2005, 4 days after the woman arrived to live with the host family. Vaccination records indicated that both children were up to date for all other routine vaccinations. The patient had no known or reported exposure to young children during her 3-day trip to Colombia. She had no underlying medical or immune-compromising conditions.

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**Editorial Note:** This report describes the first case of paralytic poliomyelitis identified in the United States since 1999 and the first imported VAPP case ever documented in the United States (1). Although the patient initially had a working diagnosis of an acute peripheral demyelinating process, the clinical history, physical findings, and laboratory studies are typical for paralytic polio and inconsistent with GBS, transverse myelitis, or other forms of acute flaccid paralysis (2). The patient's only known exposure to OPV was through contact with the infant grandchild of her host family. The date of the patient's onset of illness in relation to OPV vaccination

and her presumed contacts with the infant are within the expected ranges for contact VAPP cases (4–75 days and <30 days, respectively) (3). The poliovirus antibody titers, uniformly high on both acute and convalescent serum specimens, are inconclusive. However, the isolation of Sabin-strain polioviruses types 2 and 3 from a stool specimen and absence of isolation or serologic evidence for infection with another agent known to cause polio-like symptoms (e.g., West Nile virus or enterovirus 71) is consistent with VAPP (2). A panel of polio experts convened by CDC confirmed this case to be paralytic polio on the basis of standard clinical evidence, and the case was classified as imported VAPP with onset of illness within 30 days before entry into the United States, in accordance with CDC protocol (3).

Cases of paralytic polio are now rare in the United States because of the success of the U.S. childhood immunization program and the Global Polio Eradication Initiative. In the United States, the most recent cases of paralytic polio caused by indigenous and imported wild polioviruses occurred in 1979 and 1993, respectively (1). From the early 1960s, when trivalent OPV became the vaccine of choice for the childhood immunization program, to the mid-1990s, approximately eight to 10 VAPP cases occurred annually (1). Most VAPP cases occurred in OPV recipients rather than among their contacts. In the United States in the 1990s, cases of contact VAPP occurred at a rate of one case per 13 million doses of OPV distributed (1). To reduce the risk for VAPP, the United States changed to a sequential IPV/OPV schedule in 1997 and then to an all-IPV schedule in 2000 (4). This policy change resulted in elimination of VAPP in the United States, with the most recent case of VAPP, before this report, occurring in 1999 (1). High coverage rates for poliovirus vaccination have been maintained among children aged 19–35 months with the transition from OPV to IPV. In 2004, approximately 92% of children in this age group received 3 doses of IPV as part of the routine infant and child immunization schedule (5). Coverage levels greater than 95% are reached after school entry, although the majority of states allow philosophical or religious exemptions (6).

Despite high vaccination coverage, another OPV-associated risk was identified recently in the United States. In September 2005, an unvaccinated, immunocompromised infant was found to be infected with a vaccine-derived poliovirus, presumably originating outside the United States in a country that uses OPV (7). Upon further investigation, four other children in two other families in the same small, rural community were found to be asymptomatic carriers of the virus. No cases of paralysis have been associated with circulation of this virus in the community.

The Global Polio Eradication Initiative has successfully reduced the burden of paralytic polio globally and the threat of imported polio in the United States. In 1988, when the initiative began, 125 countries reported cases of paralytic polio (8). At the end of 2004, six countries had endemic polio (Afghanistan, Egypt, India, Niger, Nigeria, and Pakistan) and transmission had been reestablished in six countries (Burkina Faso, Central African Republic, Chad, Côte d'Ivoire, Mali, and Sudan) (8). The Americas were certified polio free in 1994, with the most recent reported case occurring in Peru in 1991 (9).

For protection against polio, all infants and children in the United States, regardless of travel status, should receive 4 doses of IPV at ages 2, 4, and 6–18 months and 4–6 years (4). If accelerated protection is needed, the minimum interval between doses is 4 weeks, although the preferred interval between the second and third dose is 2 months. The minimum age for IPV administration is 6 weeks. Infants and children who have begun receiving the poliovirus vaccination series with 1 or more doses of OPV should receive IPV to complete the series (4).

Because of the minimal risk for exposure to polioviruses and because most adults are immune as a result of vaccination during childhood, routine poliovirus vaccination of adults (i.e., persons aged  $\geq 18$  years) residing in the United States is recommended only for certain adult groups who are at increased risk for exposure to polioviruses (4). Adults who are traveling to areas where polio is still epidemic or endemic and who are unvaccinated, incompletely vaccinated, or whose vaccination status is unknown should receive IPV (4). Two doses of IPV should be administered at intervals of 4–8 weeks; a third dose should be administered 6–12 months after the second. If 3 doses of IPV cannot be administered within the recommended intervals before protection is needed, the following alternatives are recommended:

- If more than 8 weeks are available before protection is needed, 3 doses of IPV should be administered at least 4 weeks apart.
- If fewer than 8 weeks but more than 4 weeks are available before protection is needed, 2 doses of IPV should be administered at least 4 weeks apart.
- If fewer than 4 weeks are available before protection is needed, a single dose of IPV is recommended (4).

Adults who are traveling to areas where polio cases are occurring and who have received a primary series with either IPV or OPV should receive another dose of IPV before departure. According to available data, adults do not need more than a single lifetime booster dose with IPV (4).

In 2004, approximately 25 million U.S. residents traveled abroad to OPV-using countries in Central and South America,

Asia, Africa, and Europe (10). Before the case described in this report, the risk for VAPP in an unvaccinated traveler to an OPV-using country with no wild poliovirus transmission was considered negligible. However, this case indicates that the risk for VAPP, although low, is not zero. Overall, the risk for paralytic disease in a traveler is much greater in a polio-endemic country or outbreak country (e.g., Nigeria) than in an OPV-using country that is free from wild poliovirus, although this increase in risk is difficult to quantify.

Polio among travelers is preventable. Travelers to countries where polio is endemic or where outbreaks are occurring should be made aware of the risk for acquiring paralytic polio in those countries and be vaccinated in accordance with current recommendations (4). Health-care providers assessing vaccine needs for unvaccinated adults traveling to countries that use OPV should be aware of the risk that OPV might pose to such travelers and should consider offering them polio vaccination. At least 4–6 weeks before departure, international travelers should contact travel medicine providers to obtain vaccinations and prophylactic medications. Providers should assess the need for itinerary-specific vaccines and ensure that travelers are up to date on all routine vaccinations, including polio vaccination. Information on vaccination requirements for international travelers is available from the CDC publication, *Health Information for International Travel, 2005–2006* (<http://www.cdc.gov/travel/yb/index.htm>).

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## Childhood Influenza Vaccination Coverage — United States, 2003–04 Influenza Season

Children aged <2 years are at increased risk for influenza-related hospitalizations (1,2). Beginning in 2002, the Advisory Committee on Immunization Practices (ACIP) encouraged that, when feasible, children aged 6–23 months and household contacts and out-of-home caregivers for children aged <2 years receive influenza vaccinations each year (1). Beginning with the 2004–05 influenza season, ACIP strengthened the encouragement to a recommendation (3). Other children recommended to receive influenza vaccination include children aged 6 months–18 years who have certain high-risk medical conditions, are on chronic aspirin therapy, or who are household contacts of persons at high risk for influenza complications (3). This report provides an assessment of childhood influenza vaccination coverage for the 2003–04 influenza season, the second year of the ACIP encouragement for influenza vaccination of children aged 6–23 months. The findings demonstrate that vaccination coverage increased from the previous influenza season but remained low, with substantial variability among states and urban areas.

This report is based on data from the 2004 National Immunization Survey (NIS), which provides estimates of vaccination coverage among noninstitutionalized children aged 19–35 months at the time of household interview. NIS is an ongoing, random-digit-dialed telephone survey of households, followed by a mail survey to all of the children's vaccination providers to obtain vaccination data. For the 2004 reporting period, NIS included children born during January 2001–July 2003. The survey is conducted in all 50 states and 28 selected urban areas (4). Entire influenza vaccination histories are obtained from children's immunization providers.

Two measures of childhood influenza vaccination coverage are reported: 1) receipt of 1 or more doses of influenza vaccine during September–December 2003 and 2) full vaccination (based on ACIP recommendations for 2 doses of influenza vaccine for previously unvaccinated children aged <9 years and 1 dose for previously vaccinated children aged <9 years) (3). Children were considered fully vaccinated if they had 1) received no doses of influenza vaccine before September 1, 2003, but then received 2 doses from September 1 through the earlier of the date of interview or January 31, 2004, or 2) received 1 or more doses of influenza vaccine before September 1 and then received 1 or more doses during September–December 2003. Analyses for both measures included only those children who were aged 6–23 months during the entire span of September–December 2003. Data were weighted to

adjust for households having multiple telephone lines, unit nonresponse, nonassessment of households without telephones, and known population control estimates.

In the 2004 NIS, the overall response rate for eligible households was 67.4%, and 13,881 children (unweighted sample size) met the age criteria for this assessment. Of these, 17.5% (95% confidence interval [CI] = 16.5–18.7) received 1 or more doses of influenza vaccine, and 8.4% (CI = 7.7–9.3) were fully vaccinated (Table). In comparison, coverage estimates for the 2002–03 season were 7.4% (CI = 6.7–8.1) for 1 or more doses of influenza vaccine and 4.4% (CI = 3.9–4.9) for fully vaccinated (5). Substantial variability in influenza vaccination coverage was observed among states and selected urban areas (Table). Percentages of children receiving 1 or more doses of influenza vaccine ranged from 5.7% (CI = 2.8–11.2) in Miami-Dade County, Florida, to 47.6 (CI = 39.7–55.6) in Rhode Island.

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**Editorial Note:** The findings in this report indicate that during the second season in which the ACIP encouraged childhood influenza vaccination, coverage increased from the previous year but remained low and varied substantially among states. This increase in coverage from the 2002–03 to the 2003–04 influenza season might reflect increased provider implementation and parent awareness of the ACIP encouragement and the early peak in disease that was reported in the media.

The 2003–04 influenza season was unusual in several respects. Influenza activity began earlier than most seasons, with peak activity occurring in December (6). A total of 153 influenza-associated deaths among U.S. children were reported to CDC (7). The publicity surrounding these deaths and the early onset of the influenza season led to a considerable increase in demand for influenza vaccine, exceeding demand in previous years. In addition, a suboptimal match between the vaccine strain and one of the widely circulating viruses was noted as the season progressed; however, studies have demonstrated some degree of vaccine effectiveness despite the mismatch (6,8).

Beginning with the 2003–04 influenza season, ACIP expanded the Vaccines for Children (VFC) program to include annual influenza vaccination for all VFC-eligible children aged 6–23 months and for VFC-eligible household contacts of children aged <2 years.\* The VFC program

\* After ACIP votes on a vaccine recommendation, the committee votes a second time to determine if the vaccine recommendation will be covered under the VFC program.



**TABLE. Influenza vaccination coverage levels among children aged 6–23 months,\* by state and selected urban area — National Immunization Survey, United States, September–December 2003**

State/ Urban area	Unweighted sample	1 or more doses of influenza vaccine		Fully vaccinated†		State/ Urban area	Unweighted sample	1 or more doses of influenza vaccine		Fully vaccinated	
		%	(95% CI)§	%	(95% CI)			%	(95% CI)	%	(95% CI)
Alabama	327	16.7	(11.6–23.5)	6.1	(3.4–10.8)	Missouri	157	9.3	(5.2–16.0)	5.7	(2.6–12.0)
Jefferson County	171	20.3	(13.4–29.5)	8.6	(4.1–17.0)	Montana	176	12.2	(7.0–20.6)	6.0	(3.2–11.0)
Alaska	184	16.0	(10.7–23.1)	8.3	(4.6–14.5)	Nebraska	182	24.6	(18.0–32.7)	14.4	(9.7–20.9)
Arizona	376	16.4	(12.2–21.7)	7.2	(4.6–11.1)	Nevada	205	7.6	(4.4–12.7)	2.4	(1.0–6.0)
Maricopa County	206	16.5	(11.2–23.7)	6.7	(3.6–12.1)	New Hampshire	162	18.2	(12.4–26.0)	9.6	(5.6–16.0)
Arkansas	163	9.8	(5.2–17.6)	2.6	(1.1–6.0)	New Jersey	373	18.1	(11.8–26.6)	8.6	(4.4–16.1)
California	726	14.7	(11.0–19.4)	7.5	(4.8–11.5)	Newark	188	12.3	(7.9–18.8)	3.1	(1.5–6.3)
Los Angeles County	185	9.6	(5.9–15.3)	2.3	(0.9–5.7)	New Mexico	204	23.9	(17.3–32.0)	12.9	(8.4–19.4)
San Diego County	199	12.2	(8.0–18.1)	5.3	(2.7–10.0)	New York	340	17.7	(13.6–22.7)	8.8	(6.2–12.4)
Santa Clara County	164	26.8	(19.9–35.1)	16.0	(10.6–23.5)	New York City	168	14.2	(9.5–20.6)	5.7	(3.2–9.9)
Colorado	192	30.9	(23.4–39.6)	14.9	(10.1–21.4)	North Carolina	179	16.3	(11.0–23.4)	5.6	(3.0–10.3)
Connecticut	155	15.2	(10.0–22.6)	6.8	(3.8–12.0)	North Dakota	196	31.9	(24.4–40.5)	22.5	(15.7–31.2)
Delaware	198	27.3	(20.0–35.9)	14.9	(9.6–22.3)	Ohio	525	14.9	(10.6–20.6)	8.0	(4.8–13.0)
District of Columbia	197	24.2	(16.7–33.8)	10.2	(5.9–17.0)	Cuyahoga County	183	20.6	(13.3–30.7)	5.7	(3.4–9.5)
Florida	487	9.5	(6.5–13.8)	3.9	(2.3–6.5)	Franklin County	166	26.2	(19.1–34.8)	11.0	(6.6–17.8)
Miami-Dade County	149	5.7	(2.8–11.2)	2.1	(0.6–6.8)	Oklahoma	203	20.9	(15.0–28.3)	7.4	(4.6–11.9)
Duval County	147	13.6	(7.8–22.6)	4.6	(2.0–10.3)	Oregon	185	13.3	(8.9–19.5)	6.8	(3.8–11.8)
Georgia	333	19.5	(12.9–28.4)	7.1	(4.1–11.8)	Pennsylvania	366	27.0	(20.5–34.6)	12.6	(8.2–18.9)
Fulton/DeKalb counties	186	23.5	(16.7–31.9)	11.0	(7.0–17.0)	Philadelphia	183	17.2	(11.8–24.3)	9.2	(5.1–15.9)
Hawaii	206	31.1	(23.9–39.3)	16.9	(11.3–24.4)	Rhode Island	188	47.6	(39.7–55.6)	29.1	(22.2–37.0)
Idaho	179	8.8	(5.2–14.6)	2.9	(1.2–7.0)	South Carolina	167	16.2	(10.7–23.8)	6.5	(3.3–12.4)
Illinois	367	16.9	(12.3–22.7)	7.3	(4.6–11.5)	South Dakota	163	27.4	(19.3–37.3)	15.0	(9.0–24.1)
Chicago	172	13.7	(8.7–20.9)	5.5	(3.0–9.9)	Tennessee	518	16.3	(12.0–21.8)	7.8	(4.9–12.2)
Indiana	315	13.8	(8.9–21.0)	8.2	(4.2–15.4)	Davidson County	162	13.5	(8.8–20.0)	4.3	(2.1–8.3)
Marion County	148	10.9	(6.7–17.2)	2.0	(0.8–5.2)	Shelby County	187	11.8	(7.5–18.0)	3.7	(1.7–7.7)
Iowa	166	23.3	(16.1–32.5)	17.9	(11.7–26.5)	Texas	897	16.6	(12.7–21.3)	7.3	(5.0–10.7)
Kansas	171	11.9	(7.5–18.3)	7.2	(3.9–13.0)	Bexar County	174	11.8	(7.6–17.8)	4.5	(2.5–8.0)
Kentucky	158	10.9	(6.5–17.5)	4.1	(1.9–8.5)	City of Houston	194	12.8	(8.5–18.8)	6.8	(3.8–11.6)
Louisiana	360	14.2	(9.3–21.1)	6.4	(3.2–12.7)	Dallas County	157	23.1	(16.0–32.1)	8.3	(4.6–14.6)
Orleans Parish	181	14.0	(9.1–21.0)	4.1	(2.2–7.7)	El Paso County	152	17.9	(11.9–26.0)	8.9	(4.9–15.5)
Maine	169	16.7	(11.2–24.3)	6.8	(3.5–12.8)	Utah	207	19.9	(14.6–26.5)	8.4	(5.3–13.2)
Maryland	343	19.4	(14.1–26.1)	10.5	(7.0–15.6)	Vermont	185	28.7	(21.3–37.4)	16.0	(10.4–23.8)
Baltimore	171	12.5	(7.9–19.2)	6.6	(3.8–11.5)	Virginia	169	29.5	(21.1–39.6)	14.7	(9.0–23.3)
Massachusetts	361	22.3	(16.6–29.2)	9.8	(6.2–15.0)	Washington	338	21.4	(16.7–27.0)	10.9	(7.5–15.6)
Boston	178	17.8	(12.3–24.9)	7.3	(4.1–12.7)	King County	174	30.1	(22.2–39.2)	13.4	(8.2–21.3)
Michigan	405	17.0	(11.9–23.7)	7.6	(4.6–12.2)	West Virginia	190	8.5	(4.9–14.2)	2.8	(1.1–6.8)
Detroit	197	6.7	(3.4–12.6)	2.3	(1.0–5.4)	Wisconsin	343	22.1	(16.9–28.5)	13.9	(9.6–19.7)
Minnesota	153	30.0	(21.2–40.7)	19.0	(12.2–28.4)	Milwaukee County	178	22.6	(16.4–30.4)	7.8	(4.7–12.5)
Mississippi	198	11.6	(7.1–18.5)	5.5	(3.0–9.9)	Wyoming	174	11.7	(7.5–17.7)	8.2	(5.1–13.0)
<b>Total</b>	<b>13,881</b>	<b>17.5</b>	<b>(16.5–18.7)</b>	<b>8.4</b>	<b>(7.7–9.3)</b>						

\* N = 13,881 (unweighted). Data represent a subset of children included in the 2004 National Immunization Survey (NIS). Includes only those children who were aged 6–23 months during the entire period of September–December 2003 and who had provider-verified immunization records.

† Children were considered fully vaccinated if they had 1) received no doses of influenza vaccine before September 1, 2003, but then received 2 doses from September 1 through either the date of interview or January 31, 2004, or 2) received 1 or more doses of influenza vaccine before September 1, 2003, and then received 1 or more doses during September–December 2003.

§ Confidence interval.

enables providers to administer free influenza vaccine to children who are uninsured or Medicaid insured, American Indian or Alaska Native children, and children whose insurance does not pay for vaccine who are vaccinated at a federally qualified health center. By addressing economic barriers among vulnerable children, this VFC expansion also might have contributed to increased vaccination coverage during the 2003–04 season.

The substantial variability in influenza vaccination coverage by state might be attributed to several factors. First, in 2003–04, influenza vaccination was not yet fully recommended by ACIP but rather encouraged when feasible, which might have resulted in varying degrees of programmatic and provider implementation during the second year of the ACIP encouragement. Second, parental awareness, attitudes, and access to influenza vaccination services for their children

also were likely to have varied. Third, the early peak of influenza activity and perception of the severity of local epidemics might have contributed to variability in coverage. For example, influenza vaccination coverage for Colorado, a state in which much publicity about influenza-related deaths of children was generated, was higher than national coverage. Further study is needed to understand the considerable variability in vaccination coverage among states.

The findings in this report reveal a low rate of full vaccination, which increased only slightly from that of the previous season. A recent study highlights the importance of 2 doses of influenza vaccine for previously unvaccinated children aged <9 years. In a study evaluating the vaccine effectiveness<sup>†</sup> of 1 and 2 doses of the 2003–04 influenza vaccine in preventing medically attended influenza-like illness (ILI) or pneumonia and influenza (P&I) among children aged 6–23 months, vaccine effectiveness was found to be 25% and 49%, respectively, for fully vaccinated children. No statistically significant reduction in ILI or P&I was found for partially vaccinated children aged 6–23 months (8). The maximum benefit from influenza vaccination is obtained when all recommended doses are administered before the onset of influenza activity in the community, which might be particularly difficult to achieve among children requiring 2 doses.

Two decisions made during this analysis might have influenced, in opposite directions, the vaccination-coverage estimates. First, analysis was limited to those vaccinations administered during September–December for the measure of receipt of 1 or more doses of influenza vaccine and during September 1, 2003–January 31, 2004 (or date of interview if the interview occurred before January 31), for the fully vaccinated measure, although some vaccines might have been administered after these months and would not have been counted. This approach possibly reduced both measures of influenza vaccination coverage described in this report, particularly the estimate of fully vaccinated children, because difficulty in scheduling and returning for the second dose of influenza vaccine might have delayed receipt of the second dose until later in the influenza season. Second, measurement of vaccination coverage was restricted to children aged 6–23 months during the entire influenza vaccination period of September–December. Children in this age group were eligible for vaccination under the ACIP encouragement for the entire period of assessment, so their caregivers and providers all had an equal amount of time to ensure vaccination for all

of the children in the sample. Therefore, the sample of children included in this assessment likely had higher vaccination coverage than children excluded who were aged 6–23 months during only a portion of the 4-month vaccination interval (i.e., those aged 21–23 months as of September 1, 2003, or who reached the vaccine-eligible age of 6 months after September 1, 2003).

The findings in this report are subject to at least three limitations. First, NIS is a telephone survey; although statistical adjustments compensate for nonresponse and households without telephones, some bias might remain. Second, NIS relies on provider-verified vaccination histories; incomplete records and reporting might result in biased estimates. Finally, because of sampling uncertainty and wide confidence intervals for many state and urban area estimates from NIS, these estimates should be interpreted with caution.

Influenza-vaccination coverage estimates increased during the second year of the ACIP encouragement but remained low. For the 2004–05 influenza season, ACIP replaced the encouragement with a recommendation (3). This change to a full recommendation appears to have resulted in increased vaccination coverage. February 2005 data from the Behavioral Risk Factor Surveillance System (BRFSS) indicated 48.4% coverage with at least 1 dose of influenza vaccine for children aged 6–23 months; this coverage also reflected effective prioritization of vaccine delivery despite an overall vaccine shortage during that influenza season. Any comparison between BRFSS and NIS data, however, must be made cautiously because of the differing birth cohorts and vaccination periods measured and because BRFSS is based on parental report, whereas NIS is based on provider-reported data (9). Analysis of immunization registry and enrollment data from one large health maintenance organization indicated that influenza vaccination coverage for the 2004–05 influenza season was 57.4% among children aged 6–23 months (10).

This report underscores the need to fully implement the new recommendation for children aged 6–23 months and household contacts of children aged <2 years to reduce the number of preventable influenza-related hospitalizations among young children (2). Complete recommendations for the 2005–06 influenza season have been published (3), and updates on the influenza season and vaccine supply are available at <http://www.cdc.gov/flu>.

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<sup>†</sup> For this study, vaccine effectiveness (%) was defined as  $(1 - \text{hazard ratio}) \times 100$ , where the hazard ratio compared the rate of influenza-like illness or pneumonia and influenza outcomes in vaccinated children to the rate in unvaccinated children.

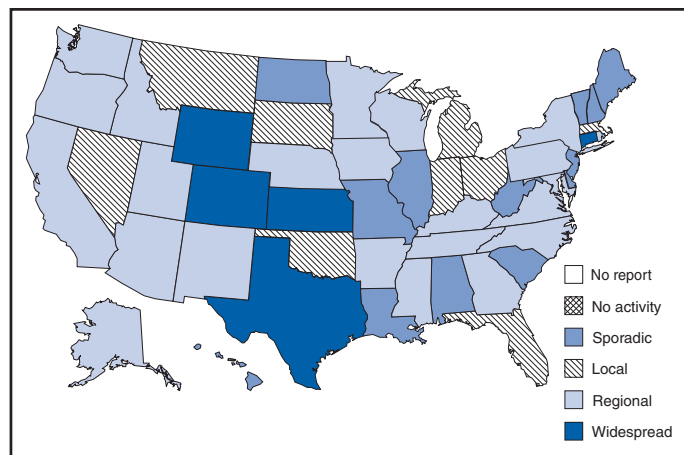
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## Update: Influenza Activity — United States, January 15–21, 2006

During January 15–21, 2006,\* the number of states reporting widespread influenza activity† decreased to five. Twenty-three states reported regional activity, nine reported local activity, and 13 reported sporadic activity (Figure 1).§

The percentage of specimens testing positive for influenza increased in the United States overall. Since October 2, 2005, the largest numbers of specimens testing positive for influenza have been reported from the Mountain (919 positives)

**FIGURE 1. Estimated influenza activity levels reported by state epidemiologists, by state and level of activity\* — United States, January 15–21, 2006**



\* Levels of activity are 1) *widespread*: outbreaks of influenza or increases in influenza-like illness (ILI) cases and recent laboratory-confirmed influenza in at least half the regions of a state; 2) *regional*: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least two but less than half the regions of a state; 3) *local*: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of a state; 4) *sporadic*: small numbers of laboratory-confirmed influenza cases or a single influenza outbreak reported but no increase in cases of ILI; and 5) *no activity*.

and Pacific (684 positives) regions, accounting for 30.6% and 22.8%, respectively, of positive tests reported during the 2005–06 influenza season. The percentage of outpatient visits for influenza-like illness (ILI)† increased during the week ending January 21 and is above the national baseline.\*\* The percentage of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold for the week ending January 21.

## Laboratory Surveillance

During January 15–21, World Health Organization (WHO) collaborating laboratories and National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories in the United States reported testing 2,283 specimens for influenza viruses, of which 247 (10.8%) were positive. Of these, 81 were influenza A (H3N2) viruses, 159 were influenza A viruses that were not subtyped, and seven were influenza B viruses.

\* Provisional data reported as of January 27. Additional information about influenza activity is updated each Friday and is available from CDC at <http://www.cdc.gov/flu>.

† Levels of activity are 1) *widespread*: outbreaks of influenza or increases in influenza-like illness (ILI) cases and recent laboratory-confirmed influenza in at least half the regions of a state; 2) *regional*: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least two but less than half the regions of a state; 3) *local*: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of a state; 4) *sporadic*: small numbers of laboratory-confirmed influenza cases or a single influenza outbreak reported but no increase in cases of ILI; and 5) *no activity*.

§ *Widespread*: Colorado, Connecticut, Kansas, Texas, and Wyoming; *regional*: Alaska, Arizona, Arkansas, California, Georgia, Idaho, Iowa, Kentucky, Maryland, Minnesota, Mississippi, Nebraska, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, Washington, and Wisconsin; *local*: Florida, Indiana, Massachusetts, Michigan, Montana, Nevada, Ohio, Oklahoma, and South Dakota; *sporadic*: Alabama, Delaware, Hawaii, Illinois, Louisiana, Maine, Missouri, New Hampshire, New Jersey, North Dakota, South Carolina, Vermont, and West Virginia; *no activity*: none; *no report*: none.

† Temperature of  $\geq 100.0^{\circ}\text{F}$  ( $\geq 37.8^{\circ}\text{C}$ ) and cough and/or sore throat in the absence of a known cause other than influenza.

\*\* The national baseline was calculated as the mean percentage of visits for ILI during noninfluenza weeks for the preceding three seasons, plus two standard deviations. Noninfluenza weeks are those in which  $<10\%$  of laboratory specimens are positive for influenza. Wide variability in regional data precludes calculating region-specific baselines; therefore, applying the national baseline to regional data is inappropriate.

Since October 2, 2005, WHO and NREVSS laboratories have tested 50,688 specimens for influenza viruses, of which 3,000 (5.9%) were positive. Of these, 2,904 (96.8%) were influenza A viruses, and 96 (3.2%) were influenza B viruses. Of the 2,904 influenza A viruses, 1,388 (47.8%) have been subtyped; 1,381 (99.5%) were influenza A (H3N2) viruses, and seven (0.5%) were influenza A (H1N1) viruses.

### P&I Mortality and ILI Surveillance

During the week ending January 21, P&I accounted for 7.4% of all deaths reported through the 122 Cities Mortality Reporting System. This percentage is below the epidemic threshold<sup>††</sup> of 8.2% (Figure 2).

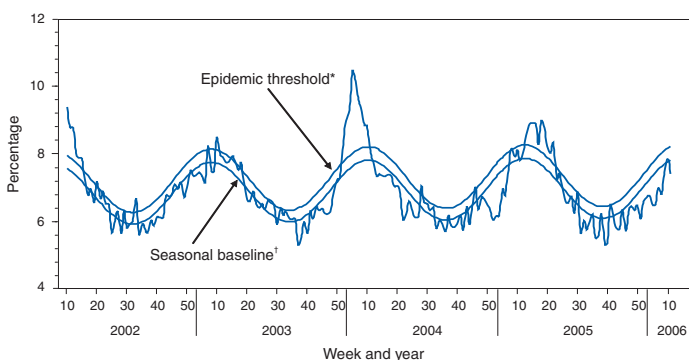
The percentage of patient visits for ILI was 2.3%, which is above the national baseline of 2.2% (Figure 3). The percentage of patient visits for ILI ranged from 0.9% in the New England region to 6.0% in the West South Central region.

### Pediatric Deaths and Hospitalizations

During October 2, 2005–January 21, 2006, CDC received reports of 11 influenza-associated deaths in U.S. residents aged <18 years. Nine of the deaths occurred during the current influenza season, and two occurred during the 2004–05 influenza season.

<sup>††</sup> The expected seasonal baseline proportion of P&I deaths reported by the 122 Cities Mortality Reporting System is projected using a robust regression procedure in which a periodic regression model is applied to the observed percentage of deaths from P&I that occurred during the preceding 5 years. The epidemic threshold is 1.645 standard deviations above the seasonal baseline.

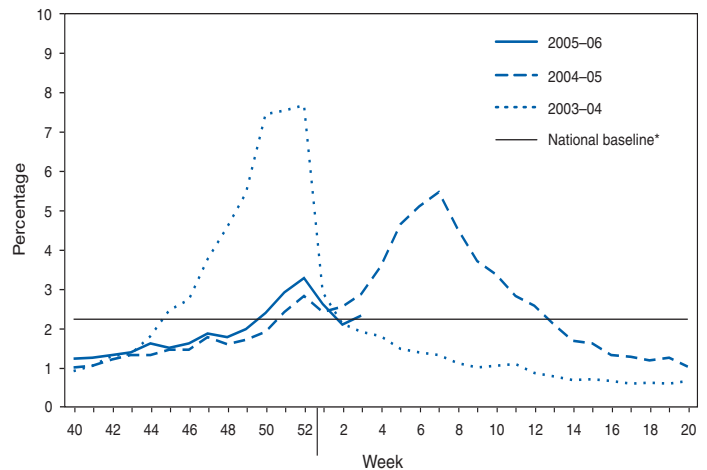
**FIGURE 2. Percentage of deaths attributed to pneumonia and influenza (P&I) reported by the 122 Cities Mortality Reporting System, by week and year — United States, 2002–2006**



\* The epidemic threshold is 1.645 standard deviations above the seasonal baseline percentage.

† The seasonal baseline is projected using a robust regression procedure that applies a periodic regression model to the observed percentage of deaths from P&I during the preceding 5 years.

**FIGURE 3. Percentage of visits for influenza-like illness (ILI) reported by the Sentinel Provider Surveillance Network, by week — United States, 2003–04, 2004–05, and 2005–06 influenza seasons**



\* The national baseline was calculated as the mean percentage of visits for ILI during noninfluenza weeks for the preceding three seasons, plus two standard deviations. Noninfluenza weeks are those in which <10% of laboratory specimens are positive for influenza. Wide variability in regional data precludes calculating region-specific baselines; therefore, applying the national baseline to regional data is inappropriate.

During October 1, 2005–January 7, 2006, the preliminary influenza-associated hospitalization rate reported by the Emerging Infections Program<sup>§§</sup> (EIP) for children aged 0–17 years was 0.18 per 10,000. For children aged 0–4 years and 5–17 years, the rate was 0.48 per 10,000 and 0.02 per 10,000, respectively. During October 30, 2005–January 7, 2006, the New Vaccine Surveillance Network<sup>¶¶</sup> (NVSN) reported no laboratory-confirmed influenza-associated hospitalizations among children aged 0–4 years. EIP and NVSN hospitalization rate estimates are preliminary.

### Human Avian Influenza A (H5N1)

No human avian influenza A (H5N1) virus infection has ever been identified in the United States. From December 2003 through January 30, 2006, a total of 160 laboratory-confirmed human avian influenza A (H5N1) infections were reported to WHO from Cambodia, China, Indonesia, Thailand, Turkey, and Viet Nam.<sup>\*\*\*</sup> Of these, 85 (53%) were fatal (Table). This represents an increase of one case and one death in China and

<sup>§§</sup> The Emerging Infections Program (EIP) Influenza Project conducts surveillance in 60 counties associated with 12 metropolitan areas: San Francisco, California; Denver, Colorado; New Haven, Connecticut; Atlanta, Georgia; Baltimore, Maryland; Minneapolis/St. Paul, Minnesota; Albuquerque, New Mexico; Las Cruces, New Mexico; Albany, New York; Rochester, New York; Portland, Oregon; and Nashville, Tennessee.

<sup>¶¶</sup> The New Vaccine Surveillance Network (NVSN) conducts surveillance in Monroe County, New York; Hamilton County, Ohio; and Davidson County, Tennessee.

<sup>\*\*\*</sup> Available at [http://www.who.int/csr/disease/avian\\_influenza/en](http://www.who.int/csr/disease/avian_influenza/en).

**TABLE. Number of laboratory-confirmed human cases and deaths from avian influenza A (H5N1) infection reported to the World Health Organization — worldwide, 2003–2006\***

Year of onset	Cambodia		China		Indonesia		Thailand		Turkey		Viet Nam		Total	
	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths
2003	0	0	0	0	0	0	0	0	0	0	3	3	3	3
2004	0	0	0	0	0	0	17	12	0	0	29	20	46	32
2005	4	4	8	5	16	11	5	2	0	0	61	19	94	41
2006	0	0	2	2	3	3	0	0	12	4	0	0	17	9
<b>Total</b>	<b>4</b>	<b>4</b>	<b>10</b>	<b>7</b>	<b>19</b>	<b>14</b>	<b>22</b>	<b>14</b>	<b>12</b>	<b>4</b>	<b>93</b>	<b>42</b>	<b>160</b>	<b>85</b>

\* As of January 30, 2006.

eight cases and two deaths in Turkey since January 23, 2006. The majority of infections appear to have been acquired from direct contact with infected poultry. No evidence of sustained human-to-human transmission of H5N1 has been detected, although rare instances of human-to-human transmission likely have occurred (1).

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#### Notice to Readers

### National Black HIV/AIDS Awareness Day, February 7, 2006

The sixth annual National Black HIV/AIDS Awareness Day is February 7, 2006. This observance is sponsored by a coalition of nongovernment organizations, with support from CDC, to call attention to the disproportionate impact of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) on the black population in the United States.

In 2004, blacks accounted for 20,965 (49%) of the estimated number of AIDS cases diagnosed in the United States, although they represented only 12.3% of the U.S. population (1). HIV/AIDS was also among the top three causes of death for black men aged 25–54 years and among the top four causes of death for black women aged 25–54 years in 2002, the most recent year for which those data are available (2). HIV/AIDS was the leading cause of death for black women aged 25–34 years (2).

The 2004 rate of AIDS diagnoses for blacks was nearly 10 times the rate for whites and three times the rate for Hispanics. The rate of AIDS diagnoses for black women was 23 times the rate for white women. The rate of AIDS diagnoses for black men was eight times the rate for white men (1). The primary mode of HIV transmission for both men and women was sexual contact with men (1).

Race and ethnicity alone are not risk factors for HIV infection. However, blacks are more likely to face certain risk factors for HIV infection and barriers to testing and treatment, including poverty and limited access to health care and HIV prevention education (3–5). Testing, health-care, education, and prevention services remain critical to stopping the spread of HIV in this community.

Information about HIV/AIDS and the black community is available from CDC at telephone 1-800-CDC-INFO and at <http://www.cdcnpin.org> and <http://www.cdc.gov/hiv/pubs/facts/afam.htm#5>. Information about National Black HIV/AIDS Awareness Day is available at <http://www.blackaidsday.org>.

#### References

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3. US Census Bureau. Poverty status of the population in 1999 by age, sex, and race and Hispanic origin. Washington, DC: US Census Bureau; March 2000. Available at <http://www.census.gov/prod/2003pubs/c2kbr-19.pdf>.
4. Diaz T, Chu SY, Buehler JW, et al. Socioeconomic differences among people with AIDS: results from a multistate surveillance project. *Am J Prev Med* 1994;10:217–22.
5. CDC. HIV transmission among black women—North Carolina, 2004. *MMWR* 2005;54:89–93.

### Errata: Vol. 55, No. SS-1

In the *Surveillance Summary*, “Prevalence of Four Developmental Disabilities Among Children Aged 8 Years — Metropolitan Atlanta Developmental Disabilities Surveillance Program, 1996 and 2000,” on page 1, in the second column, the sentence beginning on the third line should read, “MADDSP continues to estimate the prevalence of these five disorders in the metropolitan Atlanta area and serves as a model surveillance program for 16 other states that conduct disability surveillance (i.e., Alabama, Arizona, Arkansas, California,

Colorado, Florida, Maryland, Missouri/Illinois, New Jersey, North Carolina, Pennsylvania, South Carolina, Utah, West Virginia, and Wisconsin)."

On page 4, in Table 1, the \*\* footnote should read, "For 2000, race does not include **eight** children whose race was not indicated."

On page 5, in Table 2, the §§ footnote should read, "Does not include **seven** children whose race was not indicated." In

addition, in the "TOTAL††" row, "144<sup>§††</sup>" should read "**144<sup>§§</sup>**," and the corresponding footnote should read, "**§§ Does not include one child whose race was not indicated.**"

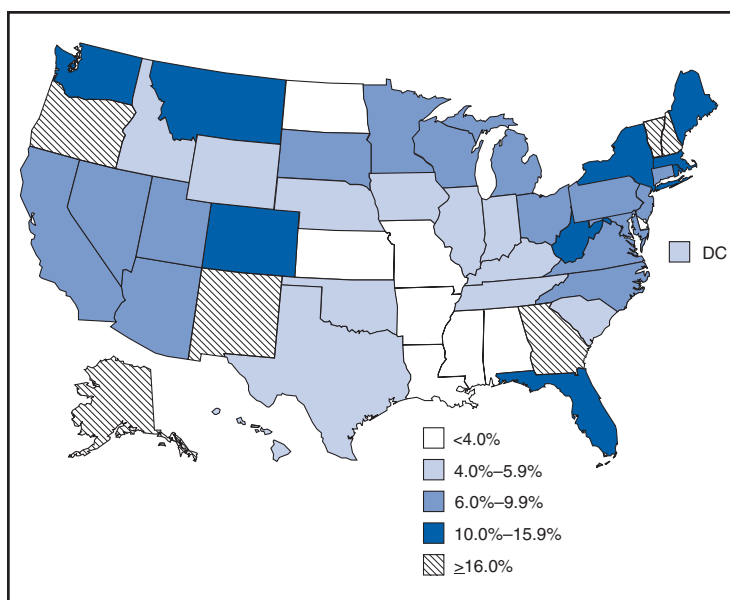
On page 6, in Table 4, in the "TOTAL" row, "53<sup>§</sup>" should read "**53**," and the corresponding footnote should be deleted.

On page 7, in Table 6, in the "Multiple" row, "2.6.9" should read "**26.9**."

## QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

### Percentage of Births Attended by Midwives — United States, 2003



In 2003, approximately 8.0% of births were attended by midwives, more than double the 1990 rate of 3.9%. In six states (Alaska, Georgia, New Hampshire, New Mexico, Oregon, and Vermont), rates were at least twice as high as the national rate.

**SOURCE:** National Vital Statistics System, Natality File 2003. Available at <http://www.cdc.gov/nchs/births.htm>.

**TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending January 28, 2006 (4th Week)\***

Disease	Current week	Cum 2006	5-year weekly average <sup>†</sup>	Total cases reported for previous years					States reporting cases during current week (No.)
				2005	2004	2003	2002	2001	
Anthrax	—	—	—	—	—	—	2	23	
Botulism:									
foodborne	—	—	0	19	16	20	28	39	
infant	1	1	1	85	87	76	69	97	WA (1)
other (wound & unspecified)	—	2	0	24	30	33	21	19	
Brucellosis	1	4	1	103	114	104	125	136	NJ (1)
Chancroid	—	1	1	26	30	54	67	38	
Cholera	—	—	0	6	5	2	2	3	
Cyclosporiasis <sup>§</sup>	—	2	1	731	171	75	156	147	
Diphtheria	—	—	—	—	—	1	1	2	
Domestic arboviral diseases <sup>§¶</sup> :									
California serogroup	—	—	—	65	112	108	164	128	
eastern equine	—	—	—	21	6	14	10	9	
Powassan	—	—	—	—	1	—	1	N	
St. Louis	—	—	—	9	12	41	28	79	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis <sup>§</sup> :									
human granulocytic	—	1	0	710	537	362	511	261	
human monocytic	2	17	1	473	338	321	216	142	NE (2)
human (other & unspecified)	—	—	0	117	59	44	23	6	
<i>Haemophilus influenzae</i> ,**									
invasive disease (age <5 yrs):									
serotype b	—	—	0	8	19	32	34	—	
nonsensory type b	1	3	3	111	135	117	144	—	CT (1)
unknown serotype	4	9	3	194	177	227	153	—	FL (1), GA (1), SC (1), WY (1)
Hansen disease <sup>§</sup>	1	3	1	86	105	95	96	79	WI (1)
Hantavirus pulmonary syndrome <sup>§</sup>	—	—	0	22	24	26	19	8	
Hemolytic uremic syndrome, postdiarrheal <sup>§</sup>	—	3	1	194	200	178	216	202	
Hepatitis C viral, acute	5	26	30	745	713	1,102	1,835	3,976	IL (1), KY (2), NH (1), NJ (1)
HIV infection, pediatric (age <13 yrs) <sup>§††</sup>	—	—	4	255	436	504	420	543	
Influenza-associated pediatric mortality <sup>§,§§,¶¶</sup>	2	8	1	49	—	N	N	N	
Listeriosis	—	20	8	812	753	696	665	613	
Measles	1	1***	1	65	37	56	44	116	IN (1)
Meningococcal disease,††† invasive:									
A, C, Y, & W-135	1	10	6	269	—	—	—	—	WA (1)
serogroup B	1	4	4	150	—	—	—	—	WA (1)
other serogroup	—	1	1	19	—	—	—	—	
Mumps	1	7	3	275	258	231	270	266	MN (1)
Plague	—	—	—	7	3	1	2	2	
Poliomyelitis, paralytic	—	—	—	1	—	—	—	—	
Psittacosis <sup>§</sup>	—	—	0	19	12	12	18	25	
Q fever <sup>§</sup>	4	7	1	132	70	71	61	26	GA (3), NE (1)
Rabies, human	—	—	0	2	7	2	3	1	
Rubella	—	—	0	12	10	7	18	23	
Rubella, congenital syndrome	—	—	0	1	—	1	1	3	
SARS-CoV <sup>§,§§</sup>	—	—	—	—	—	8	N	N	
Smallpox <sup>§</sup>	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome <sup>§</sup>	—	1	3	101	132	161	118	77	
<i>Streptococcus pneumoniae</i> , <sup>§</sup>									
invasive disease (age <5 yrs)	14	38	13	982	1,162	845	513	498	CT (5), GA (2), MN (4), OH (1), OR (2)
Syphilis, congenital (age <1 yr)	2	5	8	296	353	413	412	441	MO (1), OK (1)
Tetanus	—	1	0	20	34	20	25	37	
Toxic-shock syndrome (other than streptococcal) <sup>§</sup>	1	1	2	88	95	133	109	127	WI (1)
Trichinellosis	1	3	0	18	5	6	14	22	WI (1)
Tularemia <sup>§</sup>	1	1	0	132	134	129	90	129	KY (1)
Typhoid fever	2	13	5	283	322	356	321	368	TN (1), WI (1)
Vancomycin-intermediate <i>Staphylococcus aureus</i> <sup>§</sup>	—	—	—	2	—	N	N	N	
Vancomycin-resistant <i>Staphylococcus aureus</i> <sup>§</sup>	—	—	—	—	1	N	N	N	
Yellow fever	—	—	—	—	—	—	1	—	

—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.

\* Incidence data for reporting years 2004, 2005, and 2006 are provisional, whereas data for 2001, 2002, and 2003 are finalized.

† Calculated by summing the incidence counts for the current week, the two weeks preceding the current week, and the two weeks following the current week, for a total of 5 preceding years. Additional information is available at <http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf>.

§ Not notifiable in all states.

¶ Includes both neuroinvasive and non-neuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases (ArboNET Surveillance).

\*\* Data for *H. influenzae* (all ages, all serotypes) are available in Table II.

†† Updated monthly from reports to the Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention. Implementation of HIV reporting influences the number of cases reported. Data for HIV/AIDS are available in Table IV quarterly.

§§ Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases.

¶¶ Of the 13 cases reported since October 2, 2005 (week 40), only 11 occurred during the current 2005–06 season.

\*\*\* The one measles case reported for the current week was indigenous.

††† Data for meningococcal disease (all serogroups and unknown serogroups) are available in Table II.









TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending January 28, 2006, and January 29, 2005 (4th Week)\*

Reporting area	Lyme disease					Malaria				
	Current week	Previous 52 weeks		Cum 2006	Cum 2005	Current week	Previous 52 weeks		Cum 2006	Cum 2005
		Med	Max				Med	Max		
<b>United States</b>	22	289	1,311	121	539	15	22	46	49	92
<b>New England</b>	1	43	209	2	47	1	1	12	3	2
Connecticut	1	9	154	1	—	—	0	10	—	—
Maine	—	2	25	—	3	—	0	1	—	—
Massachusetts	—	12	141	—	39	—	1	4	2	2
New Hampshire	—	4	17	1	4	—	0	1	—	—
Rhode Island	—	0	12	—	—	—	0	1	—	—
Vermont†	—	0	5	—	1	1	0	2	1	—
<b>Mid. Atlantic</b>	15	179	913	64	367	2	6	15	7	27
New Jersey	—	38	306	—	118	—	1	7	—	8
New York (Upstate)	7	48	686	16	68	1	1	5	1	2
New York City	—	0	0	—	—	—	3	8	2	14
Pennsylvania	8	57	452	48	181	1	1	2	4	3
<b>E.N. Central</b>	—	12	155	1	23	1	2	6	4	9
Illinois	—	0	6	—	—	—	0	2	1	4
Indiana	—	0	4	—	—	—	0	1	—	—
Michigan	—	1	7	1	1	—	0	2	—	3
Ohio	—	1	5	—	5	1	0	3	2	1
Wisconsin	—	10	146	—	17	—	0	2	1	1
<b>W.N. Central</b>	—	13	99	1	2	—	1	5	4	4
Iowa	—	1	8	—	2	—	0	1	—	2
Kansas	—	0	3	1	—	—	0	1	—	—
Minnesota	—	9	96	—	—	—	0	3	2	—
Missouri	—	0	2	—	—	—	0	3	1	2
Nebraska†	—	0	1	—	—	—	0	2	—	—
North Dakota	—	0	0	—	—	—	0	0	—	—
South Dakota	—	0	1	—	—	—	0	1	1	—
<b>S. Atlantic</b>	3	31	125	43	92	7	6	15	16	16
Delaware	1	9	37	13	38	—	0	1	—	1
District of Columbia	1	0	2	1	—	—	0	2	—	—
Florida	—	1	8	1	3	—	1	6	3	3
Georgia	—	0	1	—	—	4	0	5	5	6
Maryland	—	16	86	23	45	3	1	9	5	4
North Carolina	1	0	5	5	4	—	0	8	3	1
South Carolina†	—	0	3	—	1	—	0	2	—	—
Virginia†	—	3	20	—	1	—	0	4	—	1
West Virginia	—	0	6	—	—	—	0	2	—	—
<b>E.S. Central</b>	—	1	4	—	2	—	0	2	—	2
Alabama†	—	0	1	—	—	—	0	1	—	1
Kentucky	—	0	1	—	—	—	0	2	—	—
Mississippi	—	0	0	—	—	—	0	0	—	—
Tennessee†	—	0	4	—	2	—	0	2	—	1
<b>W.S. Central</b>	—	1	8	—	1	1	1	9	2	5
Arkansas	—	0	2	—	—	—	0	2	—	1
Louisiana	—	0	2	—	1	—	0	1	—	—
Oklahoma	—	0	0	—	—	1	0	6	1	—
Texas†	—	0	7	—	—	—	1	9	1	4
<b>Mountain</b>	—	0	4	—	—	1	0	6	1	7
Arizona	—	0	4	—	—	—	0	4	—	2
Colorado	—	0	1	—	—	—	0	3	—	2
Idaho†	—	0	1	—	—	—	0	0	—	—
Montana	—	0	0	—	—	—	0	0	—	—
Nevada†	—	0	2	—	—	—	0	1	—	—
New Mexico†	—	0	1	—	—	—	0	1	—	1
Utah	—	0	1	—	—	1	0	2	1	1
Wyoming	—	0	1	—	—	—	0	1	—	1
<b>Pacific</b>	3	2	10	10	5	2	4	12	12	20
Alaska	—	0	1	—	—	—	0	1	1	1
California	3	2	10	10	4	2	3	9	11	18
Hawaii	N	0	0	N	N	—	0	4	—	—
Oregon†	—	0	2	—	1	—	0	2	—	1
Washington	—	0	3	—	—	—	0	4	—	—
American Samoa	U	0	0	U	U	U	0	0	U	U
C.N.M.I.	U	0	0	U	U	U	0	0	U	U
Guam	U	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.

U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

\* Incidence data for reporting years 2005 and 2006 are provisional.

† Contains data reported through the National Electronic Disease Surveillance System (NEDSS). Because of a technical problem with hardware, NEDSS data from these states are not included this week.













TABLE III. Deaths in 122 U.S. cities,\* week ending January 28, 2006 (4th Week)

Reporting Area	All causes, by age (years)							Reporting Area	All causes, by age (years)						
	All Ages	≥65	45-64	25-44	1-24	<1	P&I <sup>†</sup> Total		All Ages	≥65	45-64	25-44	1-24	<1	P&I <sup>†</sup> Total
<b>New England</b>	625	448	113	45	11	8	48	<b>S. Atlantic</b>	1,464	936	369	96	37	25	68
Boston, MA	151	100	37	7	2	5	7	Atlanta, GA	198	115	59	15	7	2	8
Bridgeport, CT	49	37	9	3	—	—	3	Baltimore, MD	146	97	34	12	3	—	17
Cambridge, MA	12	9	3	—	—	—	—	Charlotte, NC	123	89	27	7	—	—	13
Fall River, MA	33	27	5	—	1	—	4	Jacksonville, FL	139	74	52	9	1	3	6
Hartford, CT	64	47	9	6	2	—	8	Miami, FL	41	35	4	—	2	—	3
Lowell, MA	29	24	2	2	1	—	1	Norfolk, VA	57	32	16	4	3	2	1
Lynn, MA	7	6	1	—	—	—	—	Richmond, VA	63	40	12	3	4	4	4
New Bedford, MA	32	28	—	4	—	—	3	Savannah, GA	63	48	11	2	2	—	2
New Haven, CT	36	16	8	9	3	—	2	St. Petersburg, FL	77	54	19	—	1	3	3
Providence, RI	54	40	6	5	1	2	9	Tampa, FL	245	174	49	15	3	4	8
Somerville, MA	3	2	1	—	—	—	—	Washington, D.C.	299	170	82	28	11	7	3
Springfield, MA	39	27	9	2	1	—	2	Wilmington, DE	13	8	4	1	—	—	—
Waterbury, CT	36	22	9	4	—	1	3	<b>E.S. Central</b>	1,017	656	253	67	19	22	71
Worcester, MA	80	63	14	3	—	—	6	Birmingham, AL	167	95	52	13	3	4	17
<b>Mid. Atlantic</b>	1,998	1,411	402	120	37	28	124	Chattanooga, TN	122	82	31	5	—	4	8
Albany, NY	41	27	10	—	1	3	4	Knoxville, TN	97	72	19	5	1	—	5
Allentown, PA	27	20	5	2	—	—	—	Lexington, KY	85	66	14	2	1	2	8
Buffalo, NY	93	69	19	5	—	—	12	Memphis, TN	217	139	53	15	7	3	15
Camden, NJ	33	21	9	2	—	1	1	Mobile, AL	94	64	17	9	1	3	3
Elizabeth, NJ	17	11	4	1	—	1	—	Montgomery, AL	66	43	18	2	1	2	6
Erie, PA	35	29	6	—	—	—	2	Nashville, TN	169	95	49	16	5	4	9
Jersey City, NJ	7	7	—	—	—	—	—	<b>W.S. Central</b>	1,753	1,151	410	114	44	34	145
New York City, NY	1,069	747	211	74	23	14	62	Austin, TX	124	70	40	9	2	3	15
Newark, NJ	68	34	24	7	2	1	1	Baton Rouge, LA	60	45	11	3	1	—	2
Paterson, NJ	28	14	9	3	1	1	3	Corpus Christi, TX	40	26	5	5	1	3	5
Philadelphia, PA	222	159	48	13	2	—	18	Dallas, TX	217	133	54	23	4	3	18
Pittsburgh, PA <sup>§</sup>	U	U	U	U	U	U	U	El Paso, TX	160	109	33	8	6	4	17
Reading, PA	37	27	8	2	—	—	1	Fort Worth, TX	131	81	39	5	4	2	15
Rochester, NY	123	99	15	6	2	1	7	Houston, TX	498	332	107	35	11	13	33
Schenectady, NY	31	24	5	1	1	—	3	Little Rock, AR	65	39	17	5	4	—	4
Scranton, PA	25	18	7	—	—	—	3	New Orleans, LA <sup>¶</sup>	U	U	U	U	U	U	U
Syracuse, NY	82	61	13	—	3	5	6	San Antonio, TX	217	157	43	10	3	4	22
Trenton, NJ	29	20	6	1	1	1	—	Shreveport, LA	92	59	25	4	2	2	5
Utica, NY	10	7	1	1	1	—	—	Tulsa, OK	149	100	36	7	6	—	9
Yonkers, NY	21	17	2	2	—	—	1	<b>Mountain</b>	1,315	907	239	88	26	29	133
<b>E.N. Central</b>	2,047	1,407	438	124	39	39	129	Albuquerque, NM	110	84	18	6	2	—	13
Akron, OH	44	35	8	1	—	—	3	Boise, ID	52	41	7	3	1	—	8
Canton, OH	38	27	8	2	—	1	4	Colorado Springs, CO	70	50	16	1	1	2	4
Chicago, IL	370	216	104	30	9	11	26	Denver, CO	102	68	24	5	2	3	11
Cincinnati, OH	83	52	19	5	2	5	12	Las Vegas, NV	325	223	66	21	7	8	26
Cleveland, OH	179	142	29	5	3	—	11	Ogden, UT	34	24	4	4	1	1	—
Columbus, OH	199	128	46	19	2	4	14	Phoenix, AZ	249	149	39	24	5	6	26
Dayton, OH	137	97	25	9	2	4	5	Pueblo, CO	32	25	4	3	—	—	1
Detroit, MI	171	93	53	17	4	4	9	Salt Lake City, UT	144	100	24	8	5	7	18
Evansville, IN	65	53	11	1	—	—	6	Tucson, AZ	197	143	37	13	2	2	26
Fort Wayne, IN	63	48	12	1	1	1	2	<b>Pacific</b>	1,434	1,025	282	88	26	13	144
Gary, IN	11	7	2	1	1	—	—	Berkeley, CA	17	16	1	—	—	—	1
Grand Rapids, MI	64	53	6	3	1	1	6	Fresno, CA	U	U	U	U	U	U	U
Indianapolis, IN	185	137	31	9	4	4	11	Glendale, CA	11	8	2	1	—	—	—
Lansing, MI	31	23	5	1	2	—	1	Honolulu, HI	25	18	2	4	1	—	—
Milwaukee, WI	105	74	24	6	1	—	2	Long Beach, CA	80	60	14	5	1	—	14
Peoria, IL	48	41	6	1	—	—	4	Los Angeles, CA	318	214	60	30	9	5	35
Rockford, IL	43	23	14	1	4	1	1	Pasadena, CA	39	33	3	2	1	—	5
South Bend, IN	50	36	8	4	1	1	1	Portland, OR	99	64	26	5	3	1	6
Toledo, OH	111	78	25	5	1	2	8	Sacramento, CA	263	181	58	15	7	2	22
Youngstown, OH	50	44	2	3	1	—	3	San Diego, CA	156	119	27	6	3	1	21
<b>W.N. Central</b>	605	402	133	39	17	14	44	San Francisco, CA	102	74	23	4	—	1	14
Des Moines, IA	61	49	10	2	—	—	6	San Jose, CA	U	U	U	U	U	U	U
Duluth, MN	34	23	10	1	—	—	1	Santa Cruz, CA	29	23	5	1	—	—	3
Kansas City, KS	12	8	3	1	—	—	—	Seattle, WA	123	77	34	8	1	3	10
Kansas City, MO	75	50	17	5	1	2	3	Spokane, WA	49	40	8	1	—	—	7
Lincoln, NE	51	36	8	5	—	2	10	Tacoma, WA	123	98	19	6	—	—	6
Minneapolis, MN	66	41	10	7	6	2	3	<b>Total</b>	12,258**	8,343	2,639	781	256	212	906
Omaha, NE	96	68	16	6	4	2	7								
St. Louis, MO	117	61	42	6	4	4	8								
St. Paul, MN	65	47	12	4	2	—	3								
Wichita, KS	28	19	5	2	—	2	3								

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. 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.

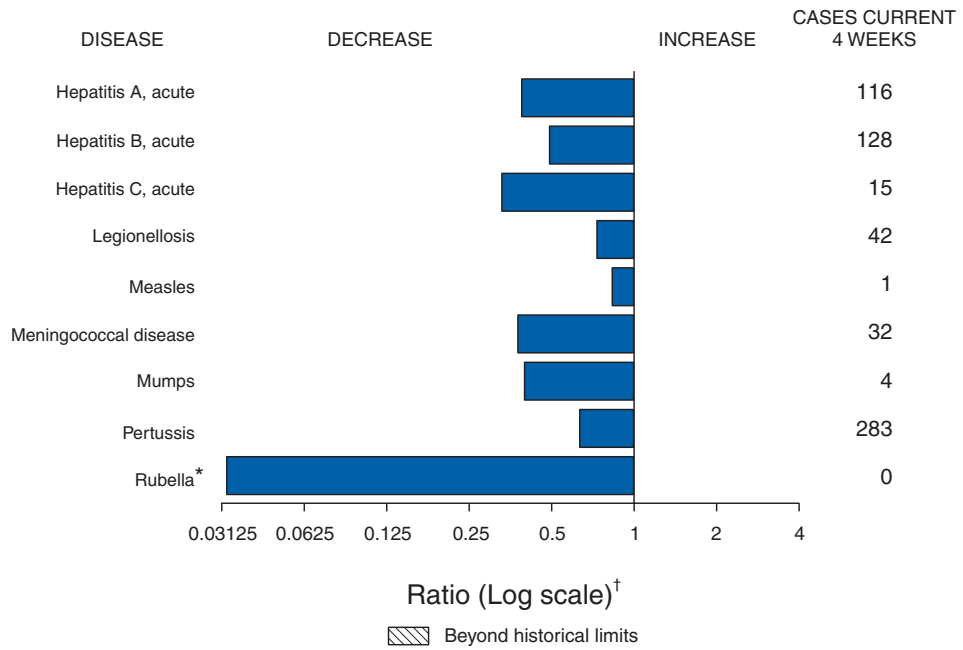
† Pneumonia and influenza.

§ 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.

¶ Because of Hurricane Katrina, weekly reporting of deaths has been temporarily disrupted.

\*\* Total includes unknown ages.

**FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals January 28, 2006, with historical data**



\* No rubella cases were reported for the current 4-week period yielding a ratio for week 4 of zero (0).  
 † 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.



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