MMWR™
Morbidity and Mortality Weekly Report
www.cdc.gov/mmwr

Weekly January 11, 2008 / Vol. 57 / No. 1

National Birth Defects Prevention Month and Folic Acid Awareness Week

January is National Birth Defects Prevention Month. Birth defects affect approximately one in 33 newborns and are a leading cause of infant mortality in the United States (*1*). The cost of lifetime care for infants born in a single year with one or more of 17 severe birth defects was estimated at $6 billion in the most recent study (*1*).

This year, National Birth Defects Prevention Month focuses on preventing infections during pregnancy. Health-care professionals should encourage women who are pregnant or who might become pregnant to adopt behaviors that can prevent infections that might cause birth defects. For example, women can reduce their risk for cytomegalovirus infection by washing their hands often, especially after changing diapers, and by not sharing food, drinks, or eating utensils with young children. Additional information about preventing infections during pregnancy is available at http://www.cdc.gov/ncbddd/pregnancy_gateway/infection.htm.

January 7–13 is National Folic Acid Awareness Week. Health-care professionals should encourage every woman who might become pregnant to consume 400 μg of synthetic folic acid every day in a vitamin supplement or in foods enriched with folic acid. Following this regimen before and during early pregnancy can prevent serious birth defects of the spine and brain (*2*). Additional information about CDC's birth defects prevention activities is available at http://www.cdc.gov/ncbddd.

References

1. CDC. Economic costs of birth defects and cerebral palsy—United States, 1992. MMWR 1995;44:694–9.
2. CDC. Recommendation for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. MMWR 1992;41(No. RR-14).

Update on Overall Prevalence of Major Birth Defects — Atlanta, Georgia, 1978–2005

Major structural or genetic birth defects affect approximately 3% of births in the United States, are a major contributor to infant mortality (*1*,*2*), and result in billions of dollars in costs for care (*3*). Although the causes of most major birth defects are unknown, concerns have been raised that certain factors, such as an increase in the prevalence of diabetes among women, might result in increased prevalence of birth defects over time (*4*). This report updates previously published data from the Metropolitan Atlanta Congenital Defects Program (MACDP), the oldest population-based birth defects surveillance system in the United States with active case ascertainment (*5*). For the period 1978–2005, CDC assessed the overall prevalence of major birth defects and their frequency relative to selected maternal and infant characteristics. The MACDP results indicated that the prevalence of major birth defects

INSIDE

MMWR QuickGuide

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

The *MMWR* series of publications is published by the Coordinating Center for Health Information and Service, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

Suggested Citation: Centers for Disease Control and Prevention. [Article title]. MMWR 2008;57:[inclusive page numbers].

in metropolitan Atlanta, Georgia, remained stable during 1978–2005 but varied by maternal age and race/ethnicity, birthweight, and gestational age. Tracking the overall prevalence of major birth defects can identify subgroups that are affected disproportionately; additional measures focused on these subgroups might improve preconception care and care during pregnancy to prevent birth defects.

State-based surveillance programs monitor the prevalence of certain birth defects through various methods, including passive hospital-based reporting and active medical-record abstraction (*6*). These data are used for prevention, education, policy, and health-care planning (*7*). However, most state-based surveillance programs were established in recent years and only monitor certain types of defects; therefore, population-based estimates of the overall prevalence of all defects and data on long-term trends are lacking in the United States. MACDP, established in 1967 by CDC, Emory University, and the Georgia Mental Health Institute, monitors the prevalence of all major structural or genetic defects at the time of delivery among live births, stillbirths, and pregnancies electively terminated after prenatal diagnosis of defects at ≥20 weeks' gestation in the five central counties of metropolitan Atlanta (*5*). MACDP defines major structural or genetic birth defects as conditions that 1) result from a malformation, deformation, or disruption in one or more parts of the body, a chromosomal abnormality, or a known clinical syndrome; 2) are present at birth; and 3) have a serious, adverse effect on health, development, or functional ability.

To collect data on birth defects, trained MACDP records abstractors visit birth and pediatric hospitals and genetic laboratories to review in-patient medical records of infants and fetuses of ≥20 weeks' gestation. Systematic case-finding by the abstractors at each hospital includes review of labor and delivery logs, nursery and intensive-care logs (including neonatal intensive-care logs), stillbirth and pathology logs, and disease indices. The medical records for each infant or fetus with a potential birth defect are then examined to identify those with defects that meet the MACDP case definition. Information about identified defects among live births is updated until age 6 years. However, the system might miss certain defects, including those that 1) occur among children whose families move away from the Atlanta area before diagnosis, 2) are managed on an outpatient basis only, 3) are unrecognized among stillbirths, or 4) are diagnosed prenatally among pregnancies subsequently terminated outside a hospital setting. Denominator data on the number of live births to residents of the five counties are obtained from vital records of the Georgia Department of Human Resources. Such data have

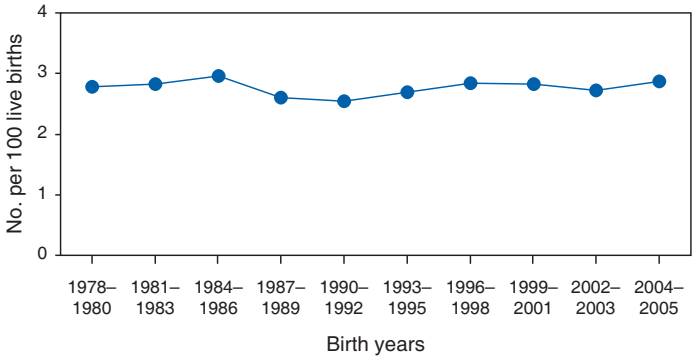
included maternal Hispanic ethnicity only since 1990. Data on birthweight have been available since 1978 for the offspring of white mothers and black mothers and since 1997 for Hispanic mothers; data on gestational age have been available since 1988 for the offspring of white mothers and black mothers and since 1997 for Hispanic mothers.

For MACDP purposes, prevalence is defined as the number of infants and fetuses with a major birth defect that were delivered during a specified period divided by the number of live births during that period. For this report, the overall prevalence of major defects per 100 live births was estimated for each of three periods (1978–1987, 1988–1996, and 1997–2005) and by the following characteristics: maternal race/ethnicity (white, black, or Hispanic), maternal age (<35 years or ≥35 years), infant birthweight (<2,500 g or ≥2,500 g), gestational age (20–36 weeks or ≥37 weeks), and sex. The three periods were chosen because they corresponded to available denominator data for birthweight and gestational age and enabled comparisons of periods of approximately equal length. Data for 2005 are preliminary because abstractions for defects that were not diagnosed or did not require hospitalization until the child was several months of age might not yet have been processed. Data for racial/ethnic groups other than whites, blacks, and Hispanics were not included in this report because of small numbers. Prevalence ratios (PRs) and 95% confidence intervals (CIs) were calculated. Trend over time in overall prevalence was evaluated using the Mantel-Haenszel test for trend.

The overall prevalence of major defects was stable from 1978 (2.8 per 100 live births) to 2005 (3.0 per 100) (test for trend p = 0.19) (Figure). During this period, the number of births in the metropolitan Atlanta area more than doubled, from 24,396 in 1978 to 51,400 in 2005. Prevalence of defects generally was lower among births to black mothers (PR = 0.94, CI = 0.93–0.95) and Hispanic mothers (PR = 0.89, CI = 0.86–0.93) than to white mothers.

Births to women aged ≥35 years had a greater prevalence of defects than births to women aged <35 years (PR = 1.28, CI = 1.24–1.31), with this excess prevalence increasing over time (Table). During 1978–2005, the overall prevalence was greater among infants with birthweight <2,500 g (PR = 2.97, CI = 2.90–3.04) and among infants with gestational age of 20–36 weeks (PR = 2.53, CI = 2.47–2.59). Prevalence was greater among males than among females (PR = 1.17, CI = 1.16–1.18); however, the higher prevalence among males decreased when defects that occur almost exclusively in males (e.g., hypospadias) were excluded (PR = 1.04, CI = 1.02–1.05).

FIGURE. Overall prevalence of major structural or genetic birth defects,* by selected maternal and infant characteristics and maternal race/ethnicity — Metropolitan Atlanta Congenital Defects Program (MACDP), 1978–2005†



* MACDP defines major structural or genetic birth defects as conditions that 1) result from a malformation, deformation, or disruption in one or more parts of the body, a chromosomal abnormality, or a known clinical syndrome; 2) are present at birth; and 3) have a serious, adverse effect on health, development, or functional ability.
† 2005 data are preliminary. Mantel-Haenszel test for trend, p = 0.19.

Reported by: *L Rynn, J Cragan, MD, A Correa, MD, PhD, Div of Birth Defects and Developmental Disabilities, National Center on Birth Defects and Developmental Disabilities, CDC.*

Editorial Note: The findings in this report indicate that the overall prevalence of major birth defects in metropolitan Atlanta did not change significantly during 1978–2005. This finding suggests that, over time, no changes occurred in major risk factors that affect birth defects overall. This information can be useful in assessing the success of prevention interventions for defects overall.

However, although the overall prevalence did not change significantly, a greater prevalence of birth defects among infants of low birthweight and preterm gestation might signal a need for increased prenatal health care and planning for the extended-care requirements. The greater prevalence of defects among the offspring of women aged ≥35 years likely reflects an upward trend in maternal age distribution and the progressive association of certain defects as maternal age increases beyond 35 years (*8,9*). The lower prevalence of defects among black and Hispanic infants might reflect an actual lower prevalence among these groups; however, racial and ethnic variation in health-insurance coverage, diagnosis of nonsymptomatic defects through pediatric and subspecialty care, and ascertainment of these defects by MACDP's hospital-based methods also might affect differences in defect prevalence. Further evaluation of these differences is needed.

The stable overall prevalence of major birth defects in Atlanta is consistent with the trend observed for many individual defects (*5*). However, the prevalence of certain

TABLE. Overall number and prevalence* of major structural or genetic birth defects,† by selected maternal and infant characteristics and maternal race/ethnicity — Metropolitan Atlanta Congenital Defects Program (MACDP), 1978–2005§

		Maternal race/ethnicity									
		White		Black		Hispanic¶		Total**		Prevalence ratio	(95% CI††)
Characteristic	Period	No.	Prevalence	No.	Prevalence	No.	Prevalence	No.	Prevalence		
Total		**15,448**	**2.92**	**10,971**	**2.62**	**2,224**	**2.57**	**29,769**	**2.76**	—	—
Age of mother (yrs)											
<35	1978–1987	4,141	2.69	3,007	2.97	—	—	**7,554**	**2.80**	Referent	—
≥35		371	2.94	117	3.66	—	—	**572**	**3.19**	1.14	(1.05–1.23)
<35	1988–1996	4,366	2.81	3,021	2.31	293	2.25	**7,953**	**2.47**	Referent	—
≥35		878	3.35	349	3.15	28	2.64	**1,305**	**3.27**	1.24	(1.18–1.31)
<35	1997–2005	3,949	3.00	3,622	2.43	1,703	2.55	**9,793**	**2.64**	Referent	—
≥35		1,432	3.70	783	3.70	193	3.37	**2,540**	**3.62**	1.31	(1.26–1.35)§§
Birthweight (g)¶¶											
≥2,500	1978–1987	3,825	2.30	2,224	2.40	—	—	**6,168**	**2.34**	Referent	—
<2,500		944	9.04	958	7.21	—	—	**1,935**	**8.05**	3.02	(2.90–3.15)
≥2,500	1988–1996	4,297	2.33	2,213	1.78	—	—	**7,003**	**2.19**	Referent	—
<2,500		927	8.42	1,150	6.42	—	—	**2,225**	**7.48**	2.98	(2.87–3.10)
≥2,500	1997–2004	3,868	2.71	2,608	1.97	1,237	2.12	**8,131**	**2.29**	Referent	—
<2,500		918	9.21	1,243	6.68	342	9.50	**2,631**	**7.69**	2.93	(2.83–3.04)
Gestational age (wks)***											
≥37	1988–1996	4,141	2.40	2,304	2.00	—	—	**6,937**	**2.33**	Referent	—
20–36		990	7.26	998	4.94	—	—	**2,137**	**6.14**	2.33	(2.25–2.42)
≥37	1997–2005	4,043	2.62	2,973	2.02	1,433	2.14	**8,963**	**2.29**	Referent	—
20–36		1,217	7.60	1,357	5.95	424	7.57	**3,141**	**7.12**	2.68	(2.60-2.77)
Sex											
Female	1978–1987	1,933	2.25	1,422	2.72	—	—	**3,416**	**2.43**	Referent	—
Male		2,857	3.13	1,753	3.26	—	—	**4,700**	**3.18**	1.13	(1.11–1.16)
Female	1988–1996	2,003	2.26	1,386	1.98	145	2.10	**3,663**	**2.14**	Referent	—
Male		3,241	3.48	1,971	2.74	176	2.44	**5,580**	**3.12**	1.19	(1.17–1.21)
Female	1997–2005	2,148	2.58	1,795	2.14	855	2.40	**5,050**	**2.33**	Referent	—
Male		3,244	3.73	2,609	3.01	1,043	2.83	**7,294**	**3.25**	1.17	(1.15–1.18)

* Per 100 live births.
† MACDP defines major structural or genetic birth defects as conditions that 1) result from a malformation, deformation, or disruption in one or more parts of the body, a chromosomal abnormality, or a known clinical syndrome; 2) are present at birth; and 3) have a serious, adverse effect on health, development, or functional ability.
§ 2005 data are preliminary.
¶ Data on age of mother and sex of offspring have been available by maternal Hispanic ethnicity only since 1990. Data on birthweight and gestational age of offspring have been available by maternal Hispanic ethnicity only since 1997. Mothers categorized as Hispanic might be of any race.
** Includes racial/ethnic populations other than white, black, and Hispanic.
†† Confidence interval.
§§ Trend in major defect prevalence over time is statistically significant (p<0.05) using Mantel-Haenszel test for trend.
¶¶ 2005 birthweight data were not available.
*** Data on gestational age were available for the offspring of white mothers and black mothers only since 1988.

defects in Atlanta has changed over time. For example, a decline in the prevalence of anencephaly and spina bifida might reflect fortification of the U.S. grain supply with folic acid and increased consumption of folic acid vitamin supplements. Progressive declines in the prevalence of clubfoot not associated with spina bifida and of cleft lip (with or without cleft palate) also have been observed. In contrast, the prevalence of Down syndrome and other autosomal trisomies among the offspring of mothers aged ≥35 years has increased over time, likely reflecting the increase in age distribution of mothers aged ≥35 years in metropolitan Atlanta (CDC, unpublished data, 2007). The prevalence of ventricular septal defect, atrial septal defect, and valvar pulmonic stenosis also have increased progressively, likely reflecting increased use of bedside echocardiography to diagnose heart defects among newborns (*5*).

The findings in this report are subject to at least four limitations. First, because childbearing women in Atlanta might differ from women in other areas of the United States with respect to characteristics that might be associated with the risk for birth defects, the observed prevalence of major birth defects in metropolitan Atlanta might not be generalizable to other populations. Second, the specific defect inclusion and exclusion criteria used by MACDP might differ from those used by other surveillance programs, resulting in differences in prevalence estimates (*10*). For example, the MACDP case definition does not include developmental, functional, or other types of congenital disorders (e.g., nonstructural or genetic disorders not detected in children aged ≤6 years). Third, data in this report do not include defects diagnosed prenatally among pregnancies electively terminated before 20 weeks' gestation or

outside a hospital setting. Failure to ascertain these pregnancies might result in underestimation of the prevalence of major defects (*9*). Finally, data on age of mother and sex of offspring were available by maternal Hispanic ethnicity only since 1990, and data on birthweight and gestational age of offspring were available by maternal Hispanic ethnicity only since 1997.

Population-based data on the overall prevalence of major birth defects can be used to identify subgroups that are affected disproportionately, evaluate prevention measures (e.g., promotion of preconception health and health care use), and recommend additional health-care services and resources where needed. These Atlanta findings should encourage surveillance programs elsewhere to monitor the overall prevalence of major defects in their areas, assess their public health burden, and examine the variability of defects among specific populations.

Acknowledgments

This report is based, in part, on contributions by J Kucik, C Alverson, S Gilboa, D Gambrell, and MACDP abstractors and staff members, Div Birth Defects and Developmental Disabilities, National Center on Birth Defects and Developmental Disabilities, CDC.

References

1. Hoyert DL, Mathews TJ, Menacker F, et al. Annual summary of vital statistics: 2004. Pediatrics 2006;117:168–83.
2. Yoon PW, Olney RS, Khoury MJ, Sappenfield WM, Chavez GF, Taylor D. Contributions of birth defects and genetic diseases to pediatric hospitalizations: a population-based study. Arch Pediatr Adolesc Med 1997;151:1096–103.
3. CDC. Hospital stays, hospital charges, and in-hospital deaths among infants with selected birth defects—United States, 2003. MMWR 2007;56:25–9.
4. Yang J, Cummings EA, O'Connell C, Jangaard K. Fetal and neonatal outcomes of diabetic pregnancies. Obstet Gynecol 2006;108(3 pt 1): 644–50.
5. Correa A, Cragan JD, Kucik ME, et al. Metropolitan Atlanta Congenital Defects Program: 40th anniversary edition surveillance report. Reporting birth defects surveillance data 1968–2003. Birth Defects Res A Clin Mol Teratol 2007;79:65–186.
6. National Center on Birth Defects and Developmental Disabilities, CDC. State birth defects surveillance program directory. Birth Defects Res Part A Clin Mol Teratol 2006;76:837–93.
7. Williams LJ, Mai CT, Edmonds LD, et al. Prevalence of spina bifida and anencephaly during the transition to mandatory folic acid fortification in the United States. Teratol 2002;66:33–9.
8. Hollier LM, Leveno KJ, Kelly MA, McIntire DD, Cunningham FG. Maternal age and malformations in singleton births. Obstet Gynecol 2000;96(5 pt 1):701–6.
9. Siffel C, Correa A, Cragan J, Alverson CJ. Prenatal diagnosis, pregnancy terminations and prevalence of Down syndrome in Atlanta. Birth Defects Res A Clin Mol Teratol 2004;70:565–71.
10. Holmes LB. Need for inclusion and exclusion criteria for the structural abnormalities recorded in children born from exposed pregnancies. Teratol 1999;59:1–2.

Use of Supplements Containing Folic Acid Among Women of Childbearing Age — United States, 2007

Neural tube defects (NTDs) are serious birth defects of the brain (anencephaly) and spine (spina bifida) that affect approximately 3,000 pregnancies each year in the United States (*1*). In 1992, the U.S. Public Health Service recommended that all women of childbearing age in the United States capable of becoming pregnant consume 400 μg of folic acid daily to reduce their risk for having a pregnancy affected by NTDs (*2*). To assess awareness, knowledge, and behavior related to folic acid among women of childbearing age (aged 18–45 years), CDC analyzed the results of a national survey conducted annually by the Gallup Organization during the period 2003–2007.* This report summarizes the results of that analysis, which indicated that, among all women of childbearing age, those aged 18–24 years had the least awareness regarding folic acid consumption (61%), the least knowledge regarding when folic acid should be taken (6%), and the lowest reported daily use of supplements containing folic acid (30%). Because women in this age group account for nearly one third of all births in the United States (*3*), promotion of folic acid consumption should be targeted to this population.

Since 1995, the March of Dimes Foundation has contracted the Gallup Organization to conduct a series of national, random-digit–dialed telephone surveys of a proportionate stratified sample of women of childbearing age to assess awareness, knowledge, and behavior regarding folic acid. The surveys include multiple-choice and open-ended questions. To assess awareness of folic acid, respondents were asked a multiple-choice question, "Have you ever heard, read, or seen anything about folic acid?" To assess knowledge about folic acid, respondents were asked two open-ended questions, "What have you heard, read, or seen about folic acid?" and "Which vitamins or mineral supplements do you think are important to women of childbearing age?" To assess the source of knowledge about folic acid, respondents were asked an open-ended question, "Where did you learn about folic acid?" To assess behavior, respondents were asked an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?" Women who reported taking a daily multivitamin, a prenatal vitamin, or a folic acid only supplement were considered to be taking a supplement containing folic acid. To assess barriers

* The 2006 survey included only women aged 18–35 years and therefore was excluded.

to taking folic acid, respondents were asked an open-ended question, "Why do you not take any vitamin or mineral supplement on a daily basis?" Women who are currently pregnant were not excluded from the sample. For certain survey questions, stratification by pregnancy status provided useful comparative information. In 2007, a total of 2,003 women of childbearing age (18–45 years) were sampled, with women aged 18–24 years being oversampled. The response rate was 32%. Statistical estimates were weighted to reflect the total population of women aged 18–45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling was plus or minus 2 or 3 percentage points (with 95% confidence).

In 2007, approximately 40% of all women surveyed reported daily consumption of a supplement containing folic acid. This percentage is equal to that observed in 2004 and is an increase from 33% in 2005 and from 32% in 2003. Women who were nonwhite, were aged 18–24 years, had less than a high school education, or had a household income of <$25,000 were the least likely to report daily consumption of a supplement containing folic acid (Table 1).

Several differences in folic acid awareness and knowledge were observed among age groups. In 2007, approximately 61% of women aged 18–24 years reported being aware of folic acid, compared with 87% of women aged 25–34 years and 89% of women aged 35–45 years (Table 2). Additionally, women aged 18–24 years were less knowledgeable about the need for folic acid consumption before pregnancy (6%), compared with women aged 35–45 years (16%). In 2007, approximately 42% of women surveyed reported folic acid as the most important vitamin for women of childbearing age. This represented an increase from 30% in 2005. However, differences were observed by age group, with women aged 25–34 years being most likely to mention folic acid (55%), compared with women aged 35–45 years (43%) and women aged 18–24 years (20%).

In 2007, approximately 33% of women who were aware of folic acid reported that they had heard about folic acid from their health-care provider, followed by a magazine or newspaper (31%) and radio or television (23%). Women aged 18–24 years were more likely to hear about folic acid from a magazine or newspaper (25%) or school or college (22%) than from their health-care provider (17%), whereas 37% of women aged 25–34 years and 36% of women aged 35–45 years reported hearing about folic acid from their health-care provider.

Reported daily consumption of a supplement containing folic acid also differed by age group. In 2007, women aged 25–34 years were the most likely to report consuming a daily supplement containing folic acid (47%), followed by women aged 35–45 years (40%) and women aged 18–24 years (30%). Among women who reported not taking a vitamin or mineral supplement on a daily basis, the most common reason was "forgetting" (33%), followed by "no need" (18%), "no reason" (14%), and "already get balanced nutrition" (12%).

TABLE 1. Percentage of women aged 18–45 years who reported taking a supplement containing folic acid daily,* by survey year and selected sociodemographic characteristics — United States, 2003–2007†

Characteristic	2003 (N = 2,006) (%)	2004 (N = 2,012) (%)	2005 (N = 2,647) (%)	2007 (N = 2,003) (%)
Race				
White	34	43	36	40
Nonwhite	28	31	23	36
Ethnicity				
Hispanic	29	38	27	38
Non-Hispanic	33	40	34	40
Age group (yrs)				
18–24	25	31	24	30
25–34	34	39	36	47
35–45	35	46	37	40
Education				
Less than high school	21	19	20	29
High school	28	32	31	36
College (any)	37	48	35	48
Annual household income				
<$25,000	24	30	27	32
$25,000–$39,999	31	40	28	39
$40,000–$49,999	39	48	37	43
≥$50,000	38	46	38	43
Pregnancy status				
Pregnant	82	81	90	93
Not pregnant	30	37	31	37
Total	**32**	**40**	**33**	**40**

SOURCE: Gallup Organization.

* Based on response to an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?"

† Statistical estimates were weighted to reflect the total population of women aged 18–45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling was plus or minus 2 or 3 percentage points (with 95% confidence). The 2006 survey included only women aged 18–35 years and therefore was excluded.

Reported by: *JR Petrini, PhD, March of Dimes Foundation, White Plains, New York. HC Hamner, MPH, AL Flores, MPH, J Mulinare, MD, C Prue, PhD, Div of Birth Defects and Developmental Disabilities, National Center on Birth Defects and Developmental Disabilities, CDC.*

Editorial Note: In 1998, the Food and Drug Administration mandated that folic acid be added to cereal grain products. A 26% decline in the NTD rate in the United States was observed from the period before (1995–1996) to the period after (1999–2000) fortification (*1*). However, racial/ethnic disparities persisted, with Hispanic women having

TABLE 2. Percentage of women aged 18–45 years reporting awareness, knowledge, and behavior related to folic acid, by survey year and age group — United States, 2003–2007*

Survey year/ Age group (yrs)	Awareness†	Knowledge§	Behavior¶
2003 (N = 2,006)			
18–24	73	8	25
25–34	82	11	34
35–45	81	10	35
Total	**79**	**10**	**32**
2004 (N = 2,012)			
18–24	70	10	31
25–34	80	14	39
35–45	80	11	46
Total	**77**	**12**	**40**
2005 (N = 2,647)			
18–24	72	5	24
25–34	88	9	36
35–45	87	8	37
Total	**84**	**7**	**33**
2007 (N = 2,003)			
18–24	61	6	30
25–34	87	12	47
35–45	89	16	40
Total	**81**	**12**	**40**

SOURCE: Gallup Organization.

* Statistical estimates were weighted to reflect the total population of women aged 18–45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling was plus or minus 2 or 3 percentage points (with 95% confidence). The 2006 survey included only women aged 18–35 years and therefore was excluded.

† Based on response to a multiple-choice question, "Have you ever, heard, read, or seen anything about folic acid?"

§ Based on response to an open-ended question, "What have you heard, read, or seen about folic acid?"

¶ Based on response to an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?"

the highest rate of NTDs and the lowest reported consumption of folic acid (*4*). A statewide survey conducted annually in California during the period 2002–2006 indicated that Hispanic women had the lowest use of supplements containing folic acid (*5*). In addition to the racial/ethnic disparities, differences of supplement use by age have been reported (*6*).

Although year-to-year variation has been observed over time, the percentage of women of childbearing age who reported consumption of a daily supplement containing folic acid increased overall from 28% in 1995 to 32% in 2003 (*6*) and to 40% in 2004 and 2007. One of the *Healthy People 2010* objectives is to increase to 80% the proportion of all women of childbearing age who consume 400 µg of folic acid daily to reduce their risk for serious birth defects (objective no. 16-16a) (*7*). Thus, although progress has been made toward this goal, approximately 60% of women of childbearing age surveyed in 2007 were still not consuming a daily supplement containing folic acid. Women aged 18–24 years have the highest rate of unintended pregnancies in the United States (*8*) but remain the least aware of and knowledgeable about folic acid and the least likely to report consuming a supplement containing folic acid. These findings warrant the continued promotion of folic acid consumption among all women of childbearing age and especially among women aged 18–24 years. Folic acid education that promotes consumption of folic acid from various sources (e.g., supplements containing folic acid and fortified foods), in addition to foods rich in folate, can increase the possibility of all women consuming the recommended daily amount of 400 µg (*9*).

The findings in this report are subject to at least two limitations. First, the low response rate of 32% increases the risk that response bias might have affected the results. Results should be interpreted with caution and in the context of other surveys. For certain questions, recall bias also might have affected results. Second, the survey was limited to households with landline telephones, and the results might not be representative of all households. Whether this limitation would result in overestimates or underestimates in various results is not predictable.

The findings in this report indicate that women aged 18–24 years identified schools or colleges and magazines or newspapers as their primary sources for folic acid information, so these two channels might provide important opportunities to reach this population. Research has indicated that women in this age group are more likely to respond to folic acid messages that do not focus on pregnancy or infants (*10*). Innovative and effective messages tailored to women aged 18–24 years are needed to help change behaviors, increase awareness and knowledge regarding folic acid consumption, and ultimately reduce the incidence of NTDs.

References

1. CDC. Spina bifida and anencephaly before and after folic acid mandate—United States, 1995–1996 and 1999–2000. MMWR 2004;52:362–5.
2. CDC. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. MMWR 1992;41(No. RR-14).
3. Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2005. Natl Vital Stat Rep 2007;56(6).
4. Williams LJ, Rasmussen SA, Flores A, Kirby RS, Edmonds LD. Decline in the prevalence of spina bifida and anencephaly by race/ethnicity: 1995–2002. Pediatrics 2005;116:580–6.
5. CDC. Trends in folic acid supplement intake among women of reproductive age—California, 2002–2006. MMWR 2007;56:1106–9.
6. Green-Raleigh K, Carter H, Mulinare J, Prue C, Petrini J. Trends in folic acid awareness and behavior in the United States: the Gallup Organization for the March of Dimes Foundation surveys, 1995–2005. Matern Child Health J 2006;10(5 suppl):S177–82.

7. US Department of Health and Human Services. Healthy people 2010 (conference ed, in 2 vols). Washington, DC: US Department of Health and Human Services; 2000. Available at http://www.health.gov/healthypeople.
8. Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. Perspect Sex Reprod Health 2006;38:90–6.
9. Institute of Medicine. Dietary reference intake: folate, other B vitamins, and choline. Washington, DC: National Academies Press; 1998.
10. Lindsey LL, Hamner HC, Prue CE, et al. Understanding optimal nutrition among women of childbearing age in the United States and Puerto Rico: employing formative research to lay the foundation for national birth defect prevention campaigns. J Health Commun 2007;12:733–57.

Trends in Wheat-Flour Fortification with Folic Acid and Iron — Worldwide, 2004 and 2007

Consumption of adequate amounts of folic acid by women before pregnancy and during early pregnancy decreases their risk for having a pregnancy affected by neural tube defects (NTDs) (*1*), the most common preventable type of birth defects worldwide. Consumption of iron ameliorates iron deficiency, the most prevalent nutritional deficiency in the world, affecting approximately 2 billion persons (*2*). Although certain populations consume substantial amounts of rice and corn, worldwide, the consumption of wheat flour is greater than that of any other cereal grain. Fortification of wheat flour is an effective, simple, and inexpensive strategy for supplying folic acid, iron, and other vitamins and minerals to large segments of the world population. To assess the global change from 2004 to 2007 in 1) the percentage of wheat flour being fortified with folic acid and iron; 2) the total number of persons overall and women in particular with access to fortified wheat flour; and 3) the total number of newborns whose mothers had access to fortified wheat flour during pregnancy, CDC analyzed data from the Flour Fortification Initiative (FFI).* This report summarizes the results of that assessment, which indicated that the worldwide percentage of wheat-flour fortification increased from 18% in 2004 to 27% in 2007. The estimated number of persons with access to fortified wheat flour increased by approximately 540 million, and the annual number of newborns whose mothers had access to fortified wheat flour during pregnancy increased by approximately 14 million. Nonetheless, approximately two thirds of the world population lacks access to fortified wheat flour. Programs should continue to expand coverage of wheat-flour fortification as a strategy to increase folic acid and iron consumption.

FFI maintains a surveillance system that monitors national fortification practices and policies related to wheat flour processed in roller mills worldwide. FFI staff members use information from food balance sheets from the Food and Agriculture Organization of the United Nations to compile data on the amount (in metric tons) of wheat flour used at the country level.† FFI consultants and staff members visit or communicate with governmental, nongovernmental, or industry representatives involved in wheat production or milling in the various countries to collect country-level data on laws and regulations regarding wheat-flour fortification, annual production of fortified wheat flour, and the type and level of vitamins and minerals used in fortification. Data are collected continuously as laws and regulations change, and the database is updated annually. For this report, CDC used the FFI surveillance system database to document the number of countries with mandatory wheat-flour fortification (i.e., countries with laws or regulations requiring fortification of wheat flour with specific vitamins or minerals and penalties for lack of compliance) and calculated the percentage of wheat flour that is fortified as the amount of fortified wheat flour divided by the total amount of wheat flour used in each country. The results are presented by World Health Organization (WHO) region§ and worldwide. The percentage of persons in each country with access to fortified wheat flour was assumed to be equal to the percentage of wheat flour that is fortified. Multiplying this percentage by data on country population size obtained from the U.S. Central Intelligence Agency and by data on country-level birth rates from the United Nations International Children's Emergency Fund (UNICEF), CDC estimated the total number of persons and the total number of women with access to fortified wheat flour, and the number of newborns whose mothers had access to fortified wheat flour during pregnancy by country. Data were analyzed for 2004 (the year in which FFI was launched) and for November 2007 (the most recent data available).

From 2004 to 2007, the number of countries with documented national regulations for mandatory wheat-flour for-

* FFI is a network of public, private, and civic organizations with the goal of making fortification of wheat flour a standard practice. The FFI goal is for 70% of the wheat flour processed in roller mills (i.e., industrial mills in which flour or meal is produced by crushing grain between rollers) to be fortified with at least folic acid and iron by the end of 2008. Additional information is available at http://www.sph.emory.edu/wheatflour.

† Additional information on food balance sheets is available from the Food and Agriculture Organization of the United Nations at http://www.fao.org/docrep/003/x9892e/x9892e00.htm.

§ A list of countries in each WHO region is available at http://www.who.int/about/structure/en/index.html.

tification increased from 33 to 54. Fifty of the 54 countries with mandatory fortification in 2007 required fortification with both iron and folic acid, two with folic acid but not iron, and two with iron but not folic acid. Twenty-four of those countries also mandated wheat-flour fortification with thiamin, riboflavin, and niacin; two with thiamin and riboflavin; and two with thiamin. The percentage of wheat flour processed in roller mills that was fortified increased from 18% in 2004 to 27% in 2007. Nearly 540 million additional persons, including 167 million additional women aged 15–60 years, had access to fortified wheat flour in 2007 compared with 2004, and the annual number of newborns whose mothers had access to fortified wheat flour during pregnancy increased by approximately 14 million (Table). By region, the greatest increase in the percentage of wheat flour being fortified was in the Eastern Mediterranean Region: from 5% in 2004 to 44% in 2007 (Figure). The portion of wheat flour being fortified increased from 90% to 97% in the Americas Region (the region with the highest percentage of wheat flour being fortified), from 26% to 31% in the African Region, from 16% to 21% in the South-East Asia Region, from 3% to 6% in the European Region, and from 2% to 4% in the Western Pacific Region.

Reported by: *G Maberly, MD, Emory Univ, Atlanta, Georgia. L Grummer-Strawn, PhD, ME Jefferds, PhD, JP Peña-Rosas, MD, MK Serdula, MD, VQ Tyler, MPH, Div of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion; RJ Berry, MD, J Mulinare, MD, Div of Birth Defects and Development Disabilities, National Center for Birth Defects and Development Disabilities; I Parvanta, MS, Office of the Director, Coordinating Center for Health Promotion; NJ Aburto, PhD, EIS Officer, CDC.*

Editorial Note: Previous studies in the United States have established that fortification of wheat flour is cost effective (*3*). The cost of fortification with folic acid and iron is approximately $1.50 U.S. dollars per metric ton of wheat flour, which is pennies per person per year. NTDs affect approximately 200,000 births each year, resulting in the death of fetuses or newborns or in lifelong disabilities that result in tens to hundreds of thousands of dollars per year in direct costs per person. In the United States, folic acid fortification has an estimated economic benefit of $312–$425 million annually. The estimated benefit-cost ratio of U.S. folic acid fortification is 40:1 (*3*). Worldwide, iron deficiency is associated with approximately 861,000 deaths, approximately 35 million disability-adjusted life years lost, and billions of dollars in indirect costs annually (*4*). The benefit-cost ratio for iron fortification is approximately 36:1 (*5*).

Ecological studies from the United States (*6*), Canada (*7*), and Chile (*8*) have documented decreases of 26%, 42%, and 40%, respectively, in the rate of NTD-affected births after implementation of national regulations mandating wheat-flour fortification with folic acid. Investigators in Ireland documented that small increases in red blood cell folate levels reduce the risk for NTDs, indicating that small increases in folic acid consumption might result in substantial reductions in NTD incidence in the population (*9*). No adequate ecological studies have examined the health impact of fortifying wheat flour with iron; however, research trials have demonstrated an association between the consumption of wheat flour fortified with iron and increased hemoglobin levels and decreased prevalence of anemia (*10*).

Successful wheat-flour fortification worldwide requires adoption and enforcement of legislation for mandatory fortification at the national level, and industry and public-sector commitment for

FIGURE. Percentage of wheat flour processed in roller mills that was fortified — worldwide and by World Health Organization (WHO) region, 2004 and 2007

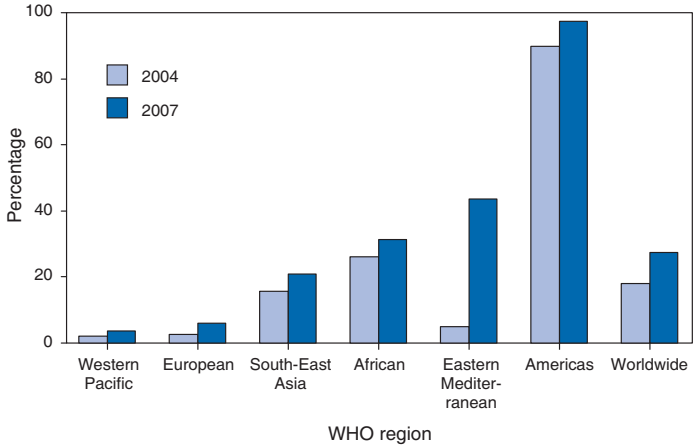


TABLE. Estimated number and percentage of persons and women who had access to fortified wheat flour and of newborns whose mothers had access to fortified wheat flour during pregnancy — worldwide, 2004 and 2007

Category	Total population	2004 No.*	2004 (%)	2007 No.*	2007 (%)	Change from 2004 to 2007 No.	Change from 2004 to 2007 (%)
Total persons	**6,512,822†**	**1,271,363**	**(19.5)**	**1,810,659**	**(27.8)**	**539,297**	**(8.3)**
Women aged 15–60 yrs	**2,142,225†**	410,091	(19.1)	577,461	(27.0)	167,370	(7.8)
Newborns whose mothers had access	**133,804§**	27,052	(20.2)	41,060	(30.7)	14,007	(10.5)

* In thousands. Calculated from data from the Flour Fortification Initiative, available at http://www.sph.emory.edu/wheatflour.
† In thousands, mid-2006 estimate. From U.S. Central Intelligence Agency, available at http://www.cia.gov.
§ In thousands. From United Nations International Children's Emergency Fund (UNICEF) birth rate estimates, available at http://www.unicef.org.

such legislation. Mandatory fortification places the same requirements on all flour producers and is more likely to succeed if the milling industry is well organized and supports fortification (*2*). Concomitant consumer education and social-marketing programs are important to ensure consumer acceptance of fortified flour products. The development and implementation of consumer education and communication strategies that include evidence of the health benefits of fortification require commitment from the public sector and is strengthened by the support of civic organizations. Through public, private, and civic collaboration, advocates and public health agencies are promoting wheat-flour fortification and the fortification of other food items (e.g., other cereal grains, soy and fish sauces, sugar, margarine, and cooking oil) to increase worldwide consumption of vitamins and minerals.

The findings in this report are subject to at least three limitations. First, flour-use data are based on Food and Agriculture Organization estimates, which, in certain instances, can be subject to substantial margins of error and do not account for differing levels of flour use among various subpopulations. However, these are the only standardized data that permit international comparisons. Second, the FFI surveillance system only monitors wheat flour processed in roller mills. The system accounts for the known production of substantial amounts of wheat flour in stone-grinder mills in Pakistan and India and assumes that the amount of flour produced in such mills in other countries is not substantial (V. Tyler, CDC, personal communication, 2008). Finally, the percentage of persons with access to fortified flour was considered to be equal to the percentage of flour that is fortified. The extent to which mandatory fortification regulations are implemented and enforced in each country is not known. In addition, several countries have terminology in their fortification laws that allows certain types of flour (e.g., "not enriched" or "brown" flour) to remain unfortified. These factors might have resulted in overestimates of persons with access to fortified flour and the percentage of flour that is fortified.

Although increases occurred from 2004 to 2007 in the number of newborns whose mothers had access to fortified wheat flour, the total number of women aged 15–60 years who had access, and the total number of persons overall who had access, the majority of the world population still lacks access to fortified wheat flour and to the folic acid, iron, and other vitamins and minerals this flour provides. Wheat-flour fortification remains an important strategy for decreasing vitamin and mineral deficiencies, along with targeted supplementation, mass fortification of other food products, in-home fortification strategies, and integrated health and economic-development programs.

Acknowledgments

This report is based, in part, on the contributions of K Grimm, B Sinclair, N Shinoda, public health students at Emory Univ, Atlanta, GA; and S Alford, MPH, Flour Fortification Initiative.

References

1. Wald NJ, Law MR, Morris JK, Wald DS. Quantifying the effect of folic acid. Lancet 2001;358:2069–73.
2. Allen L, de Benoist B, Dary O, Hurrell R, eds. Guidelines on food fortification with micronutrients. Geneva, Switzerland: World Health Organization; 2006.
3. Grosse SD, Waltzman NJ, Romano PS, Mulinare J. Reevaluating the benefits of folic acid fortification in the United States: economic analysis, regulation, and public health. Am J Pub Health 2005;95:1917–22.
4. Stoltzfus RJ, Mullany L, Black RE. Iron deficiency anemia in comparative quantification of health risks: the global burden of disease due to 25 selected major risk factors. Cambridge, MA: Harvard University Press; 2003.
5. Horton S. The economics of food fortification. J Nutr 2006;136:1068–71.
6. Williams LJ, Mai C, Edmonds LD, et al. Prevalence of spina bifida and anencephaly during the transition to mandatory folic acid fortification in the United States. Teratology 2002;66:33–9.
7. De Wals P, Tairou F, Van Allen M, et al. Reduction in neural-tube defects after folic acid fortification in Canada. New Engl J Med 2007;357:135–42.
8. Hertrampf E, Cortes F. Folic acid fortification of wheat flour: Chile. Nutr Rev 2004;62:S44–8.
9. Daly LE, Mills JL, Molloy A, et al. Minimum effective dose of folic acid for food fortification to prevent neural-tube defects. Lancet 1997;350:1666–9.
10. Sun J, Huang J, Li W, et al. Effects of wheat flour fortified with different iron fortificants on iron status and anemia prevalence in iron-deficient anemic students in Northern China. Asia Pac J Clin Nutr 2007;16:116–21.

Prevalence of Neural Tube Defects and Folic Acid Knowledge and Consumption — Puerto Rico, 1996–2006

Birth defects are one of the leading causes of infant mortality in both the mainland United States (*1*) and Puerto Rico (*2*). Neural tube defects (NTDs) are serious birth defects of the spine and brain; two of the most common NTDs are spina bifida and anencephaly. In the United States, NTD prevalence is higher among Hispanic women than among non-Hispanic white or non-Hispanic black women (*3*). In Puerto Rico, where most residents are Hispanic, the prevalence of NTDs (8.68 per 10,000 live births [*4*]) is higher than in the mainland United States (5.59 [*5*]). Consumption of folic acid before and during early pregnancy can prevent NTDs. To assess trends in NTD prevalence and prevalence of knowledge and consumption of folic acid supplements in Puerto Rico, data were analyzed from the Birth Defects Surveillance System (BDSS)

for 1996–2005 and the Behavioral Risk Factor Surveillance System (BRFSS) for 1997–2006. This report describes the results of those analyses, which indicated that prevalence of folic acid knowledge and consumption among women of childbearing age increased from 1997 to 2003 but decreased from 2003 to 2006. During similar periods, NTD prevalence declined from 1996 to 2003 but did not change significantly from 2003 to 2005. To resume the decline in prevalence of NTDs, additional measures might be needed to increase folic acid supplement use among Puerto Rican women of childbearing age.

BDSS is a population-based, active surveillance system that assesses approximately 50,000 births in Puerto Rico each year; the most recent available data are from 2005. BDSS records abstractors conduct weekly visits to all birthing hospitals and read medical logs for neonatal intensive care units, pediatric units, delivery rooms, pathology laboratories, and clinics for infants at high risk. Abstractors also visit clinics for children with special healthcare needs and pediatric cardiology offices. BDSS staff members review and code case information and perform annual record cross-checks and linkages with vital statistics databases in Puerto Rico. Data from BDSS and vital statistics records are used to calculate total annual NTD prevalence as the number of spina bifida or anencephaly cases (including live births, fetal deaths, stillbirths, spontaneous abortions, and elective terminations) per year, multiplied by 10,000 and then divided by the number of live births for each year.

BRFSS is an ongoing, random-digit–dialed telephone survey of the noninstitutionalized civilian population aged ≥18 years. BRFSS data files are weighted to the respondent's probability of being selected and to the age-, race-, and sex-specific populations from the annually adjusted census for Puerto Rico. To assess folic acid knowledge and daily folic acid consumption among nonpregnant women aged 18–44 years in Puerto Rico, data were collected from the surveys administered in 1997, 1998, 2000, 2002, 2003, 2004, and 2006; no folic acid questions were included in the 1999, 2001, and 2005 surveys. The total number of women surveyed during the 7 years of surveys was 6,356. Consumption was defined as reported daily consumption of a vitamin pill or supplement containing folic acid.* Knowledge was defined as knowing that folic acid consumption is recommended by certain health experts for the prevention of birth defects.† Statistical estimates were weighted to reflect the total population of women aged 18–44 years in Puerto Rico. During 1996–2006, the BRFSS response rate§ in Puerto Rico ranged from 67%–81%, based on Council of American Survey and Research Organizations (CASRO) guidelines. Differences in data points were considered statistically significant at $p<0.05$ by chi-square test.

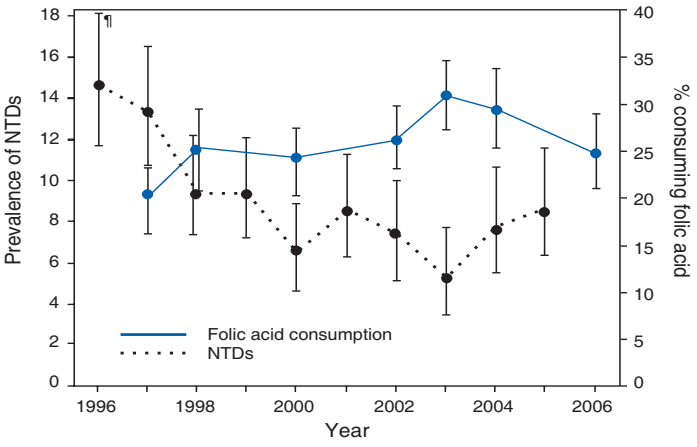
The annual number and prevalence of NTDs (i.e., spina bifida and anencephaly) in Puerto Rico declined significantly ($p<0.05$) from 93 (14.7 per 10,000 live births) in 1996 to 27 (5.3 per 10,000) in 2003 (Figure). From the 2003 levels, the number and prevalence of NTDs did not change significantly in 2004 (40 [7.8 per 10,000]) or 2005 (44 [8.7 per 10,000]). During a similar period, the estimated prevalence of folic acid supplement consumption among nonpregnant women aged 18–44 years increased significantly from 20.2% in 1997 to 30.9% in 2003, then decreased to 24.8% in 2006 (Figure, Table 1). Similarly, the estimated prevalence of knowledge of folic acid increased

* Participants were asked, "Do any of the vitamin pills or supplements you take contain folic acid?" Those who responded "yes" were then asked, "How often do you take this vitamin pill or supplement?"

† Participants were asked, "Some health experts recommend that women take 400 micrograms of the B vitamin folic acid, for which one of the following?" "To make strong bones? To prevent birth defects? To prevent high blood pressure? Some other reason?" Only participants who responded, "To prevent birth defects," were counted as reporting knowledge of folic acid.

§ The percentage of persons who completed interviews among all eligible persons, including those who were not successfully contacted. Additional information is available at http://www.cdc.gov/brfss/technical_infodata/quality.htm.

FIGURE. Prevalence* of neural tube defects (NTDs)† and estimated folic acid consumption§ among nonpregnant women aged 18–44 years — Birth Defects Surveillance System and Behavioral Risk Factor Surveillance System, Puerto Rico, 1996–2005 and 1997–2006



* Per 10,000 live births.
† Anencephaly and spina bifida.
§ Defined as reported daily consumption of a vitamin pill or supplement containing folic acid.
¶ 95% confidence interval.

TABLE 1. Estimated prevalence of folic acid consumption* among nonpregnant women aged 18–44 years, by selected characteristics — Behavioral Risk Factor Surveillance System, Puerto Rico, 1997–2006

Characteristic†	1997 (N = 586) %	1997 (95% CI§)	1998 (N = 677) %	1998 (95% CI)	2000 (N = 996) %	2000 (95% CI)	2002 (N = 1,091) %	2002 (95% CI)	2003 (N = 1,034) %	2003 (95% CI)	2004 (N = 977) %	2004 (95% CI)	2006 (N = 995) %	2006 (95% CI)
Age group (yrs)														
18–24	16.5	(9.5–23.6)	22.6	(15.3–29.9)	20.8	(13.1–28.3)	18.5	(12.7–24.3)	26.7	(19.3–34.2)	26.9	(18.6–35.3)	20.5¶	(14.1–26.9)
25–34	22.2	(16.6–27.8)	29.6	(23.5–35.7)	25.5	(19.8–31.3)	27.1	(21.2–33.1)	32.5	(25.8–39.2)	30.4	(23.9–36.8)	24.2	(19.0–29.4)
35–44	21.4	(15.5–27.3)	22.9	(17.4–28.5)	26.1	(20.6–31.6)	32.0	(27.1–36.9)	32.3	(27.4–37.2)	30.6	(25.4–35.7)	28.6¶	(24.3–32.8)
Education														
Less than high school graduate	10.5	(3.9–17.0)	12.8	(5.0–20.7)	18.9	(9.6–28.3)	28.8	(18.5–39.2)	21.8	(6.9–36.7)	29.2	(18.9–39.5)	12.0¶	(5.4–18.5)
High school or General Education Development diploma	12.4	(6.6–18.3)	24.2	(17.0–31.5)	20.3	(13.6–26.9)	19.6	(13.7–25.5)	23.5	(17.4–29.6)	17.4	(11.2–23.6)	17.8¶	(12.2–23.4)
Any college or technical school	25.4	(20.4–30.4)	27.8	(23.1–32.5)	27.2	(22.3–32.0)	28.1	(24.0–32.2)	34.9	(30.4–39.5)	34.1	(29.2–39.1)	29.2¶	(25.3–33.1)
Annual household income														
<$25,000	19.4	(14.9–23.9)	23.7	(19.0–28.4)	20.9	(16.7–25.1)	24.6	(20.4–28.8)	26.5	(22.1–31.0)	24.8	(20.2–29.4)	24.4¶	(20.4–28.3)
$25,000–$34,999	35.3	(17.9–52.7)	35.3	(22.8–47.8)	36.6	(24.2–49.0)	31.4	(21.9–40.8)	31.9	(22.0–41.7)	35.3	(23.9–46.7)	29.2¶	(20.1–38.2)
$35,000–$49,999	35.9	(16.7–55.0)	15.4	(4.5–26.3)	25.9	(10.0–41.9)	33.4	(21.3–45.6)	41.1	(27.4–54.8)	35.6	(21.8–49.4)	21.2¶	(12.2–30.2)
≥$50,000	24.2	(8.2–40.2)	35.4	(16.5–54.4)	52.8	(29.6–76.0)	48.3	(34.2–62.4)	48.4	(33.1–63.8)	42.5	(28.9–56.2)	34.6¶	(24.0–45.2)
Total	**20.2¶**	**(16.6–23.8)**	**25.4¶**	**(21.7–29.1)**	**24.2**	**(20.6–27.9)**	**26.2**	**(23.0–29.5)**	**30.9¶**	**(27.3–34.5)**	**29.5**	**(25.8–33.3)**	**24.8¶**	**(21.8–27.8)**

* Daily consumption of a vitamin pill or supplement containing folic acid.
† Denominators varied by characteristic because not all participants responded to all questions.
§ Confidence interval.
¶ Statistically significant (p<0.05) difference by chi-square test.

from 22.4% in 1997 to 72.0% in 2003, then decreased to 56.5% in 2006 (Table 2).

In 2006, statistically significant differences in reported knowledge of folic acid and folic acid supplement consumption were observed by age group, education, and household income. Among age groups, a greater percentage of women aged 25–34 years (63.6%) reported knowledge of folic acid than women aged 35–44 years (50.8%). However, a greater percentage of women aged 35–44 years (28.6%) reported folic acid supplement consumption than women aged 18–24 years (20.5%). By education level, a greater percentage of women with any college or technical school education (66.1%) reported knowledge of folic acid than those with high school or General Education Development (GED) diplomas (41.8%) and those with less than a high school education (27.1%). Those with more educa-

TABLE 2. Estimated prevalence of folic acid knowledge* among nonpregnant women aged 18–44 years, by selected characteristics — Behavioral Risk Factor Surveillance System, Puerto Rico, 1997–2006

Characteristic†	1997 (N = 586) %	1997 (95% CI§)	1998 (N = 677) %	1998 (95% CI)	2000 (N = 996) %	2000 (95% CI)	2002 (N = 1,091) %	2002 (95% CI)	2003 (N = 1,034) %	2003 (95% CI)	2004 (N = 977) %	2004 (95% CI)	2006 (N = 995) %	2006 (95% CI)
Age group (yrs)														
18–24	18.6	(11.6–25.6)	33.6	(25.4–41.8)	61.8	(53.1–70.6)	69.1	(61.9–76.3)	76.2	(69.0–83.5)	62.4	(53.7–71.1)	55.2	(46.9–63.5)
25–34	31.3	(25.0–37.5)	38.9	(32.5–45.2)	57.4	(51.2–63.6)	72.0	(66.3–77.6)	77.1	(71.7–82.6)	70.8	(64.6–77.0)	63.6¶	(57.7–69.5)
35–44	15.3	(10.1–20.5)	32.3	(26.2–38.5)	44.8	(38.8–50.9)	56.2	(51.1–61.4)	64.0	(58.8–69.2)	52.0	(46.7–57.4)	50.8¶	(46.1–55.5)
Education														
Less than high school graduate	6.4	(1.1–11.8)	15.9	(6.8–24.9)	21.6	(12.2–30.9)	41.7	(30.9–52.4)	59.4	(45.5–73.3)	40.7	(29.7–51.7)	27.1¶	(17.7–36.6)
High school or General Education Development diploma	12.7	(7.1–18.4)	24.8	(17.7–31.9)	44.5	(36.4–52.7)	45.1	(37.5–52.7)	63.4	(56.4–70.4)	50.1	(42.3–57.9)	41.8¶	(34.2–49.5)
Any college or technical school	29.7	(24.5–34.8)	42.7	(37.5–47.9)	67.4	(62.7–72.1)	75.7	(71.8–79.7)	76.8	(72.8–80.8)	69.8	(65.0–74.5)	66.1¶	(61.9–70.3)
Annual household income														
<$25,000	20.9	(16.3–25.6)	29.0	(24.2–33.9)	51.8	(46.9–56.8)	60.3	(55.7–64.8)	69.9	(65.5–74.2)	54.5	(49.5–59.6)	52.9¶	(48.3–57.6)
$25,000–$34,999	26.4	(11.5–41.2)	47.1	(34.1–60.0)	63.0	(51.3–74.6)	84.4	(78.1–90.8)	70.6	(60.7–80.6)	72.5	(61.9–83.1)	66.7	(57.1–76.3)
$35,000–$49,999	44.4	(24.9–63.8)	50.4	(34.5–66.3)	63.9	(45.9–81.9)	75.0	(62.9–87.1)	83.2	(73.1–93.3)	81.3	(70.1–92.6)	67.7	(57.2–78.3)
≥$50,000	49.5	(29.4–69.7)	72.5	(53.9–91.0)	63.9	(41.1–86.6)	84.6	(75.0–94.2)	85.4	(76.0–94.7)	81.4	(71.0–91.8)	73.9¶	(63.2–84.5)
Total	**22.4¶**	**(18.7–26.1)**	**35.2¶**	**(31.3–39.2)**	**54.9¶**	**(50.9–59.0)**	**65.4¶**	**(61.9–68.9)**	**72.0¶**	**(68.6–75.4)**	**61.6¶**	**(57.8–65.4)**	**56.5¶**	**(53.0–60.1)**

* Knowing that folic acid is recommended by some health experts for the prevention of birth defects.
† Denominators varied by characteristic because not all participants responded to all questions.
§ Confidence interval.
¶ Statistically significant (p<0.05) difference by chi-square test.

tion also were more likely (29.2%) to consume folic acid daily. By income level, women with the highest household incomes (≥$50,000) had a greater percentage of reported knowledge of folic acid (73.9%) and reported folic acid consumption (34.6%) than women with household incomes <$25,000 (52.9% and 24.4%).

Reported by: *L Alvelo-Maldonado, MS; D Valencia Bernal, MS, Puerto Rico Dept of Health. AL Flores, MPH, SD Grosse, PhD, J Mulinare, MD, Div of Birth Defects and Developmental Disabilities, National Center on Birth Defects and Developmental Disabilities, CDC.*

Editorial Note: The end of the decline in NTD (i.e., spina bifida and anencephaly) prevalence in Puerto Rico in recent years is a cause for concern. The decline from 1996 to 2003 likely was aided by a campaign urging women to consume folic acid supplements and by introduction of mandatory folic acid fortification of U.S. cereal grain products in 1998. During a similar period, 1997–2003, reported folic acid supplement consumption and knowledge about folic acid increased among women in Puerto Rico, before declining from 2003 to 2006.

Since 1994, the campaign in Puerto Rico to increase the percentage of women of childbearing age who consume folic acid supplements has resulted in some success. For example, the 24.8% of Puerto Rican women who reported folic acid supplement consumption in 2006 was nearly double the 13.1% prevalence reported by Hispanic women in the mainland United States during 2001–2002 (*6*). However, many women in Puerto Rico associate folic acid use with pregnancy, and their vitamin consumption ends once they are no longer pregnant (*7*). Approximately 66% of pregnancies resulting in live births in Puerto Rico are unintended (*8*); however, even among Puerto Rican women who were aware of folic acid and planned their pregnancies, one study determined that only 54.8% consumed folic acid supplements before pregnancy (*9*).

The findings in this report are subject to at least four limitations. First, because BRFSS survey participants are limited to persons with landline telephones who are not institutionalized, findings might not be representative of the entire population of women aged 18–44 years in Puerto Rico. Second, BRFSS questions relating to folic acid consumption do not specify the recommended daily dose (400 μg) and pertain only to vitamin supplements; therefore, the findings might underestimate or overestimate the actual number of women who consumed the recommended daily dose of folic acid. Third, certain NTD-affected pregnancies might have terminated too early for registration in a hospital, and hospital staff members might not have documented all NTD cases in their log books, resulting in a lower than actual NTD prevalence. Finally, NTDs are rare, and prevalence might be influenced by even slight variations in surveillance methods.

The folic acid campaign in Puerto Rico continues. Campaign staff members attend health fairs throughout the year; and each October on Folic Acid Awareness Day, they distribute educational materials to students at 30 university campuses. In 2006, promotional activities were extended to all public primary and secondary schools. During National Birth Defects Prevention Month in January, articles are placed in newspapers, television interviews are conducted, and partner organizations help to disseminate educational materials. The campaign has developed educational materials on birth defects prevention for health professionals and teachers. However, despite these measures, only approximately one fourth of women of childbearing age in Puerto Rico consume a vitamin containing folic acid daily, suggesting that other factors might affect behavior. Additional measures directed at understanding these factors and promoting folic acid awareness and consumption among all nonpregnant Puerto Rican women of childbearing age are warranted.

References

1. Mathews TJ, MacDorman MF. Infant mortality statistics from the 2004 period linked birth/infant death data set. Natl Vital Stat Rep 2007; 55(14).
2. Puerto Rico Department of Health, Auxiliary Secretariat for Planning and Development, Division of Statistical Analysis. 2004 annual report. San Juan, Puerto Rico: Puerto Rico Department of Health.
3. Williams LJ, Rasmussen SA, Flores A, Kirby RS, Edmonds LD. Decline in the prevalence of spina bifida and anencephaly by race/ethnicity: 1995–2002. Pediatrics 2005;116:580–6.
4. Puerto Rico Department of Health, Auxiliary Secretariat of Family Health and Integrated Services, Mother and Child Health Care Division, Puerto Rico Birth Defects Surveillance System. 2007 annual report. San Juan, Puerto Rico: Puerto Rico Department of Health.
5. Williams LJ, Mai CT, Edmonds LD, et al. Prevalence of spina bifida and anencephaly during the transition to mandatory folic acid fortification in the United States. Teratology 2002;66:33–9.
6. Yang QH, Carter HK, Mulinare J, Berry RJ, Friedman JM, Erickson JD. Race-ethnicity differences in folic acid intake in women of childbearing age in the United States after folic acid fortification: findings from the National Health and Nutrition Examination Survey, 2001–2002. Am J Clin Nutr 2007;85:1409–16.
7. Lindsey LLM, Hamner HC, Prue CE, et al. Understanding optimal nutrition among women of childbearing age in the United States and Puerto Rico: employing formative research to lay the foundation for National Birth Defects Prevention Campaigns. J Health Comm 2007;12:733–57.
8. Puerto Rico Department of Health, Auxiliary Secretariat of Family Health and Integrated Services, Mother and Child Health Care Division, Monitoring and Evaluation Section. Puerto Rico Maternal-Infant Health Survey, 2006. San Juan, Puerto Rico: Puerto Rico Department of Health.
9. De la Vega A, Salicrup E, Verdiales M. A nationwide program for the use of preconceptional folic acid to prevent the development of open neural tube defects. Who is really using folic acid? P R Health Sci J 2002;21:7–9.

Notice to Readers

Changes to *MMWR* Table I and Presentation of National Notifiable Diseases Surveillance System Data — January 2008

This issue of *MMWR* incorporates changes to Table I (Provisional cases of infrequently reported notifiable diseases, United States), including revisions to two condition categories designated as nationally notifiable by CDC and the Council of State and Territorial Epidemiologists (CSTE). In addition, a CSTE-CDC initiative is implementing a methodologic change in the way CSTE and CDC solicit and document reporting requirements for nationally notifiable infectious diseases (NNIDs). By March 2008, information about 2007 NNID reporting requirements resulting from this initiative is expected to be included in *MMWR* Table II (Provisional cases of selected notifiable diseases, United States) and other *MMWR* tables displaying National Notifiable Diseases Surveillance System (NNDSS) data.

Changes to Table I

As of January 5, 2008, two condition categories have been revised in the list of NNIDs: ehrlichiosis and Q fever. Previously, the ehrlichiosis category included the following three subcategories: 1) human granulocytic; 2) human monocytic; and 3) human, other or unspecified. Because of taxonomic changes in the pathogens, the ehrlichiosis category has been renamed "Ehrlichiosis/Anaplasmosis" and will now include the following four subcategories: *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, *Anaplasma phagocytophilum*, and ehrlichiosis/anaplasmosis, undetermined. In addition, beginning in 2008, Q fever incidence data will be displayed by separating the acute and chronic forms of the disease. Because each state will have to update its surveillance information system to reflect these new categories, reporting for these new categories is expected to be delayed for at least 1 month. The surveillance case definitions adopted for these conditions are listed within their respective CSTE position statements (*1,2*) and are posted on the case definitions section of the NNDSS website (*3*).

Methodologic Change in Identifying "N" Indicators

The CSTE-CDC 2007 State Reportable Conditions Assessment project (2007 SRCA) is collecting information from each reporting jurisdiction (i.e., 50 U.S. states, the District of Columbia, New York City, and five U.S. territories) to determine which NNIDs were reportable in 2007. The 2007 SRCA gathers information regarding whether the condition is explicitly reportable (i.e., listed as a specific disease or as a category of diseases on reportable disease lists) or whether it is implicitly reportable (i.e., included in a general category in the reportable disease list, such as "rare diseases of public health importance"). Only conditions that are explicitly reportable will be considered reportable under the new 2007 SRCA methodology.

The results of the 2007 SRCA will be used to indicate whether a specified NNID is not notifiable for the specified period and reporting jurisdiction. This information will be noted with an "N" indicator (for "not notifiable") in *MMWR* Table II (Provisional cases of selected notifiable diseases, United States) and other *MMWR* tables displaying NNDSS data by reporting jurisdiction, such as the *MMWR Summary of Notifiable Diseases, United States*. This notation will allow readers to distinguish whether 1) no cases were reported even though the condition is reportable or 2) no cases were reported because the condition is not reportable.

The results of the 2007 SRCA are not expected to be available to apply to the *MMWR* tables until the first quarter of calendar year 2008 (possibly by March 2008). Data for the "N" indicator for 2007 that were previously captured using another methodology will be used to populate *MMWR* Table II until the 2007 SRCA results are available.

The 2008 SRCA is expected to be conducted in July 2008. The *MMWR* tables displaying 2008 data will not be updated with the 2008 "N" indicators until the results of the 2008 SRCA are extracted, which is expected to occur by September or October 2008. The 2007 "N" indicators will be applied to the 2008 data until the 2008 SRCA information is available.

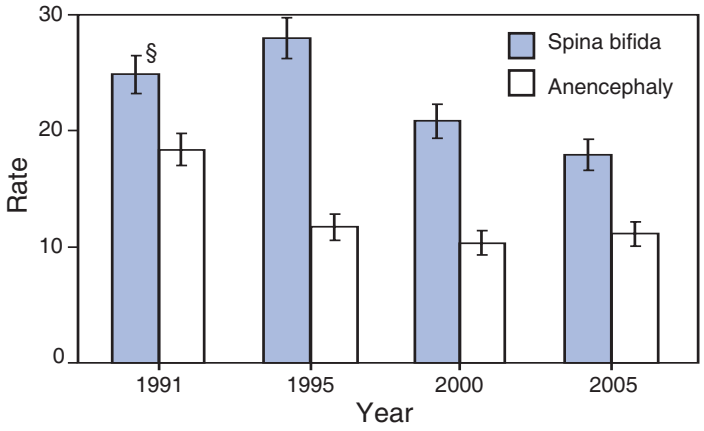
References

1. Council of State and Territorial Epidemiologists. Position statement 07-ID-03. Revision of national surveillance case definition for ehrlichiosis (ehrlichiosis/anaplasmosis). Available at http://www.cste.org/ps/2007ps/2007psfinal/id/07-id-03.pdf.
2. Council of State and Territorial Epidemiologists. Position statement 07-ID-04. Revision of the surveillance case definition for Q fever. Available at http://www.cste.org/ps/2007ps/2007psfinal/id/07-id-04.pdf.
3. CDC. Case definitions for nationally notifiable infectious diseases. Available at http://www.cdc.gov/epo/dphsi/nndsshis.htm.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Spina Bifida and Anencephaly Rates* — United States, 1991, 1995, 2000, and 2005†



* Per 100,000 live births. Annual data on birth defects are based on information reported on birth certificates provided through the National Vital Statistics System. Because of challenges associated with the reporting of birth defects during the period immediately after birth, spina bifida and anencephaly are considered underreported on birth certificates. Additional information is available at http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_06.pdf.

† Excludes data from Maryland, New Mexico, and New York, which did not require reporting for certain years.

§ 95% confidence interval.

Neural tube defects (NTDs) are serious birth defects of the brain (anencephaly) and spine (spina bifida). Since 1992, a national health recommendation has called for women of childbearing age in the United States to consume 400 μg of folic acid daily to reduce their risk for having a pregnancy affected by NTDs. The spina bifida rate per 100,000 live births declined 25% from 1995 to 2000 and 13% from 2000 to 2005. The anencephaly rate declined 36% from 1991 to 1995 and was unchanged from 1995 to 2005.

SOURCE: Mathews TJ. Trends in spina bifida and anencephalus in the United States, 1991–2005. National Vital Statistics System. Available at http://www.cdc.gov/nchs/products/pubs/pubd/hestats/spine_anen.htm.

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending January 5, 2008 (1st Week)*

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years 2007	2006	2005	2004	2003	States reporting cases during current week (No.)
Anthrax	—	—	—	—	1	—	—	—	
Botulism:									
foodborne	—	—	0	17	20	19	16	20	
infant	—	—	2	79	97	85	87	76	
other (wound & unspecified)	—	—	1	23	48	31	30	33	
Brucellosis	1	1	2	119	121	120	114	104	FL (1)
Chancroid	1	1	0	35	33	17	30	54	OR (1)
Cholera	—	—	0	7	9	8	6	2	
Cyclosporiasis§	1	1	2	94	137	543	160	75	FL (1)
Diphtheria	—	—	—	—	—	—	—	1	
Domestic arboviral diseases§,¶:									
California serogroup	—	—	—	44	67	80	112	108	
eastern equine	—	—	—	4	8	21	6	14	
Powassan	—	—	—	1	1	1	1	—	
St. Louis	—	—	0	7	10	13	12	41	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis/Anaplasmosis§:									
Ehrlichia chaffeensis	—	—	—	N	N	N	N	N	
Ehrlichia ewingii	—	—	—	N	N	N	N	N	
Anaplasma phagocytophilum	—	—	—	N	N	N	N	N	
undetermined	—	—	—	N	N	N	N	N	
Haemophilus influenzae,**									
invasive disease (age <5 yrs):									
serotype b	—	—	1	17	29	9	19	32	
nonserotype b	—	—	4	154	175	135	135	117	
unknown serotype	3	3	5	178	179	217	177	227	MO (1), NE (1), GA (1)
Hansen disease§	—	—	2	60	66	87	105	95	
Hantavirus pulmonary syndrome§	—	—	1	31	40	26	24	26	
Hemolytic uremic syndrome, postdiarrheal§	—	—	5	230	288	221	200	178	
Hepatitis C viral, acute	1	1	20	722	766	652	720	1,102	GA (1)
HIV infection, pediatric (age <13 yrs)††	—	—	3	—	—	380	436	504	
Influenza-associated pediatric mortality§,§§	—	—	1	74	43	45	—	N	
Listeriosis	2	2	16	707	884	896	753	696	FL (2)
Measles¶¶	—	—	1	30	55	66	37	56	
Meningococcal disease, invasive***:									
A, C, Y, & W-135	—	—	7	264	318	297	—	—	
serogroup B	—	—	5	129	193	156	—	—	
other serogroup	—	—	1	31	32	27	—	—	
unknown serogroup	—	—	22	563	651	765	—	—	
Mumps	2	2	13	719	6,584	314	258	231	MI (1), FL (1)
Novel influenza A virus infections	—	—	—	4	N	N	N	N	
Plague	—	—	0	6	17	8	3	1	
Poliomyelitis, paralytic	—	—	—	—	—	1	—	—	
Poliovirus infection, nonparalytic§	—	—	—	—	N	N	N	N	
Psittacosis§	—	—	0	11	21	16	12	12	
Q fever§:									
acute	—	—	—	—	—	—	—	—	
chronic	—	—	—	—	—	—	—	—	
Rabies, human	—	—	0	—	3	2	7	2	
Rubella†††	—	—	0	10	11	11	10	7	
Rubella, congenital syndrome	—	—	—	—	1	1	—	1	
SARS-CoV§,§§§	—	—	—	—	—	—	—	8	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	—	—	3	101	125	129	132	161	
Syphilis, congenital (age <1 yr)	1	1	9	519	349	329	353	413	OR (1)
Tetanus	—	—	1	20	41	27	34	20	

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

* Incidence data for reporting years 2007 and 2008 are provisional, whereas data for 2003, 2004, 2005, and 2006 are finalized.

† Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 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. Data from states where the condition is not notifiable are excluded from this table, except in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at http://www.cdc.gov/epo/dphsi/phs/infdis.htm.

¶ Includes both neuroinvasive and nonneuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for West Nile virus are available in Table II.

** 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/AIDS, Viral Hepatitis, STD, and TB Prevention. Implementation of HIV reporting influences the number of cases reported. Updates of pediatric HIV data have been temporarily suspended until upgrading of the national HIV/AIDS surveillance data management system is completed. Data for HIV/AIDS, when available, are displayed in Table IV, which appears quarterly.

§§ Updated weekly from reports to the Influenza Division, National Center for Immunization and Respiratory Diseases. One case occurring during the 2007–08 influenza season has been reported. A total of 74 cases were reported for the 2006–07 influenza season.

¶¶ No measles cases were reported for the current week.

*** Data for meningococcal disease (all serogroups) are available in Table II.

††† No rubella cases were reported for the current week.

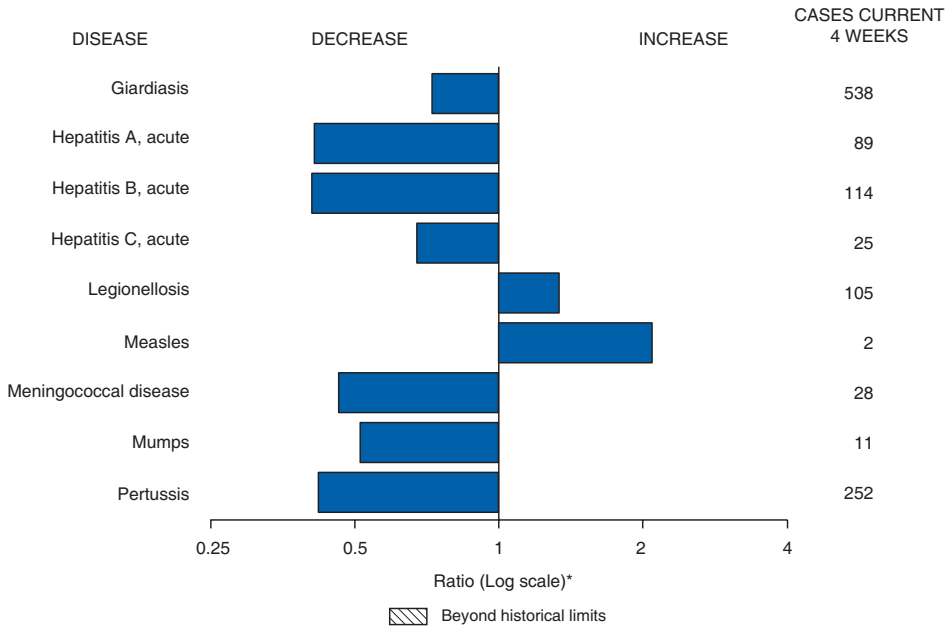
§§§ Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases.

TABLE I. (*Continued*) Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending January 5, 2008 (1st Week)*

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years 2007	2006	2005	2004	2003	States reporting cases during current week (No.)
Toxic-shock syndrome (staphylococcal)§	1	1	2	81	101	90	95	133	CO (1)
Trichinellosis	—	—	0	6	15	16	5	6	
Tularemia	—	—	2	111	95	154	134	129	
Typhoid fever	—	—	7	321	353	324	322	356	
Vancomycin-intermediate *Staphylococcus aureus*§	—	—	0	23	6	2	—	N	
Vancomycin-resistant *Staphylococcus aureus*§	—	—	0	—	1	3	1	N	
Vibriosis (noncholera *Vibrio* species infections)§	1	1	3	354	N	N	N	N	CA (1)
Yellow fever	—	—	—	—	—	—	—	—	

—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.
* Incidence data for reporting years 2007 and 2008 are provisional, whereas data for 2003, 2004, 2005, and 2006 are finalized.
† Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 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. Data from states where the condition is not notifiable are excluded from this table, except in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at http://www.cdc.gov/epo/dphsi/phs/infdis.htm.

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals January 5, 2008, with historical data



* No measles cases were reported for the current 4-week period yielding a ratio for week 1 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.

Notifiable Disease Data Team and 122 Cities Mortality Data Team

Patsy A. Hall
Deborah A. Adams
Willie J. Anderson
Lenee Blanton
Rosaline Dhara
Carol Worsham
Pearl C. Sharp

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Chlamydia†					Coccidioidomycosis					Cryptosporidiosis				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	7,252	20,858	25,197	7,252	13,350	42	141	254	42	70	25	81	975	25	85
New England	326	689	1,119	326	435	—	0	1	—	—	—	5	41	—	41
Connecticut	—	207	513	—	12	N	0	0	N	N	—	0	41	—	41
Maine§	—	49	74	—	29	—	0	0	—	—	—	1	5	—	—
Massachusetts	251	301	668	251	243	—	0	0	—	—	—	2	11	—	—
New Hampshire	16	38	73	16	35	—	0	1	—	—	—	1	5	—	—
Rhode Island§	53	62	98	53	95	—	0	0	—	—	—	0	3	—	—
Vermont§	6	19	32	6	21	N	0	0	N	N	—	1	3	—	—
Mid. Atlantic	1,059	2,801	3,951	1,059	2,168	—	0	0	—	—	3	10	113	3	2
New Jersey	—	402	526	—	323	N	0	0	N	N	—	0	6	—	—
New York (Upstate)	45	537	904	45	95	N	0	0	N	N	—	3	20	—	—
New York City	504	1,006	1,970	504	1,171	N	0	0	N	N	—	1	9	—	—
Pennsylvania	510	848	1,764	510	579	N	0	0	N	N	3	5	103	3	2
E.N. Central	592	3,254	6,210	592	2,308	1	1	3	1	—	10	20	134	10	10
Illinois	1	1,005	1,682	1	389	—	0	0	—	—	—	2	13	—	3
Indiana	222	394	646	222	646	—	0	0	—	—	—	2	23	—	—
Michigan	228	706	1,024	228	602	—	0	2	—	—	2	3	11	2	2
Ohio	51	753	3,633	51	351	1	0	1	1	—	7	5	61	7	2
Wisconsin	90	368	453	90	320	N	0	0	N	N	1	7	59	1	3
W.N. Central	212	1,192	1,465	212	741	—	0	1	—	—	—	14	125	—	5
Iowa	41	158	251	41	173	N	0	0	N	N	—	2	61	—	2
Kansas	—	151	294	—	21	N	0	0	N	N	—	2	16	—	—
Minnesota	—	254	300	—	197	—	0	0	—	—	—	3	34	—	—
Missouri	134	465	551	134	256	—	0	1	—	—	—	2	13	—	2
Nebraska§	—	90	183	—	34	N	0	0	N	N	—	1	21	—	1
North Dakota	—	27	61	—	23	N	0	0	N	N	—	0	6	—	—
South Dakota	37	49	81	37	37	N	0	0	N	N	—	2	16	—	—
S. Atlantic	2,223	3,883	5,893	2,223	1,323	—	0	1	—	—	9	19	66	9	11
Delaware	36	66	140	36	38	—	0	0	—	—	—	0	4	—	—
District of Columbia	—	112	166	—	48	—	0	0	—	—	—	0	2	—	—
Florida	664	1,241	1,565	664	294	N	0	0	N	N	5	9	35	5	5
Georgia	7	488	1,502	7	14	N	0	0	N	N	4	4	14	4	4
Maryland§	330	393	696	330	113	—	0	1	—	—	—	0	2	—	—
North Carolina	588	460	1,905	588	39	—	0	0	—	—	—	1	18	—	—
South Carolina§	280	513	3,030	280	399	N	0	0	N	N	—	1	15	—	1
Virginia§	314	485	628	314	348	N	0	0	N	N	—	1	5	—	1
West Virginia	4	62	92	4	30	N	0	0	N	N	—	0	5	—	—
E.S. Central	342	1,533	2,161	342	1,684	—	0	0	—	—	1	4	63	1	11
Alabama§	30	481	594	30	376	N	0	0	N	N	1	1	14	1	1
Kentucky	—	166	357	—	40	N	0	0	N	N	—	1	40	—	1
Mississippi	—	306	959	—	767	N	0	0	N	N	—	0	11	—	8
Tennessee§	312	506	721	312	501	N	0	0	N	N	—	1	19	—	1
W.S. Central	1,194	2,406	3,006	1,194	1,820	—	0	1	—	—	—	4	28	—	1
Arkansas§	118	178	328	118	124	N	0	0	N	N	—	0	8	—	—
Louisiana	—	368	851	—	238	—	0	1	—	—	—	1	4	—	1
Oklahoma	230	248	467	230	320	N	0	0	N	N	—	1	11	—	—
Texas§	846	1,625	2,073	846	1,138	N	0	0	N	N	—	1	16	—	—
Mountain	270	1,255	1,649	270	542	36	95	171	36	46	2	8	572	2	2
Arizona	28	479	665	28	183	36	92	170	36	46	1	1	6	1	—
Colorado	91	199	383	91	62	N	0	0	N	N	—	2	26	—	1
Idaho§	69	56	252	69	—	N	0	0	N	N	1	1	71	1	—
Montana§	1	44	82	1	35	N	0	0	N	N	—	1	7	—	—
Nevada§	—	177	293	—	109	—	1	5	—	—	—	0	6	—	—
New Mexico§	70	152	395	70	126	—	0	2	—	—	—	2	9	—	—
Utah	—	108	209	—	10	—	1	7	—	—	—	1	488	—	—
Wyoming§	11	23	35	11	17	—	0	1	—	—	—	0	8	—	1
Pacific	1,034	3,357	4,073	1,034	2,329	5	39	176	5	24	—	2	16	—	2
Alaska	13	86	124	13	59	N	0	0	N	N	—	0	2	—	—
California	831	2,679	3,283	831	1,903	5	39	176	5	24	—	0	0	—	—
Hawaii	—	110	134	—	73	N	0	0	N	N	—	0	0	—	—
Oregon§	134	173	403	134	78	N	0	0	N	N	—	2	16	—	2
Washington	56	208	621	56	216	N	0	0	N	N	—	0	0	—	—
American Samoa	—	0	32	—	—	N	0	0	N	N	—	0	0	—	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	13	34	—	11	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	129	613	—	91	N	0	0	N	N	N	0	0	N	N
U.S. Virgin Islands	—	3	10	—	2	—	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 2007 and 2008 are provisional. Data for HIV/AIDS, AIDS, and TB, when available, are displayed in Table IV, which appears quarterly.
† Chlamydia refers to genital infections caused by *Chlamydia trachomatis*.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Giardiasis					Gonorrhea					*Haemophilus influenzae*, invasive All ages, all serotypes†				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	70	295	543	70	222	2,161	6,709	7,912	2,161	4,802	27	41	63	27	49
New England	—	23	54	—	20	54	105	190	54	80	—	3	9	—	6
Connecticut	—	6	18	—	9	—	38	87	—	7	—	0	7	—	—
Maine§	—	3	10	—	1	—	2	8	—	1	—	0	4	—	—
Massachusetts	—	9	29	—	10	48	51	128	48	58	—	1	6	—	4
New Hampshire	—	0	3	—	—	—	2	6	—	1	—	0	2	—	2
Rhode Island§	—	0	15	—	—	6	7	15	6	12	—	0	2	—	—
Vermont§	—	3	8	—	—	—	1	5	—	1	—	0	1	—	—
Mid. Atlantic	11	56	97	11	34	179	686	1,014	179	732	5	9	18	5	14
New Jersey	—	6	11	—	7	—	115	159	—	95	—	1	3	—	1
New York (Upstate)	1	23	60	1	3	2	125	418	2	35	—	3	8	—	—
New York City	1	16	26	1	17	41	201	346	41	345	—	2	7	—	7
Pennsylvania	9	14	29	9	7	136	257	586	136	257	5	3	10	5	6
E.N. Central	19	47	88	19	34	243	1,274	2,586	243	975	1	5	14	1	7
Illinois	—	13	32	—	7	1	376	606	1	170	—	2	5	—	3
Indiana	N	0	0	N	N	110	164	307	110	295	—	1	7	—	—
Michigan	1	12	20	1	10	93	284	482	93	258	—	0	3	—	—
Ohio	15	15	37	15	5	19	345	1,565	19	135	1	2	5	1	3
Wisconsin	3	7	21	3	12	20	125	208	20	117	—	0	2	—	1
W.N. Central	3	21	181	3	13	53	366	514	53	267	6	3	11	6	1
Iowa	—	5	23	—	2	2	36	56	2	35	—	0	1	—	—
Kansas	—	3	11	—	1	—	42	86	—	7	—	0	2	—	1
Minnesota	—	0	163	—	—	—	63	86	—	46	—	0	9	—	—
Missouri	—	9	23	—	6	51	190	266	51	160	4	1	5	4	—
Nebraska§	3	2	8	3	1	—	24	57	—	16	2	0	2	2	—
North Dakota	—	0	3	—	—	—	2	4	—	2	—	0	1	—	—
South Dakota	—	1	6	—	3	—	5	11	—	1	—	0	0	—	—
S. Atlantic	18	54	92	18	25	859	1,560	2,335	859	459	11	11	30	11	10
Delaware	1	1	6	1	1	14	26	43	14	26	—	0	3	—	—
District of Columbia	—	0	6	—	—	—	47	71	—	28	—	0	1	—	—
Florida	13	24	47	13	12	254	489	623	254	127	—	3	10	—	2
Georgia	4	12	26	4	5	1	180	643	1	10	4	2	6	4	2
Maryland§	—	4	18	—	3	94	110	227	94	50	4	1	6	4	3
North Carolina	—	0	0	—	—	255	302	675	255	—	—	0	9	—	—
South Carolina§	—	2	6	—	—	118	206	1,361	118	179	1	1	4	1	2
Virginia§	—	9	22	—	4	123	124	224	123	30	2	1	23	2	1
West Virginia	—	0	8	—	—	—	17	37	—	9	—	0	3	—	—
E.S. Central	2	10	23	2	9	122	578	859	122	686	4	2	9	4	1
Alabama§	2	5	11	2	8	14	204	261	14	190	2	0	3	2	—
Kentucky	N	0	0	N	N	—	61	161	—	12	—	0	1	—	—
Mississippi	N	0	0	N	N	—	129	310	—	300	1	0	2	1	1
Tennessee§	—	5	16	—	1	108	181	261	108	184	1	1	6	1	—
W.S. Central	2	7	18	2	1	435	972	1,202	435	844	—	2	8	—	1
Arkansas§	—	2	9	—	—	56	76	123	56	65	—	0	1	—	—
Louisiana	—	2	11	—	1	—	220	384	—	146	—	0	1	—	1
Oklahoma	2	3	7	2	—	98	87	235	98	128	—	1	7	—	—
Texas§	N	0	0	N	N	281	596	746	281	505	—	0	2	—	—
Mountain	3	32	68	3	16	51	241	321	51	123	—	4	12	—	4
Arizona	1	3	11	1	3	22	101	130	22	39	—	1	6	—	—
Colorado	1	10	26	1	6	—	44	93	—	33	—	1	4	—	2
Idaho§	—	3	19	—	1	6	4	19	6	—	—	0	1	—	1
Montana§	—	2	8	—	—	—	1	48	—	1	—	0	1	—	—
Nevada§	—	2	7	—	—	—	43	87	—	24	—	0	1	—	—
New Mexico§	—	2	5	—	2	23	31	63	23	23	—	1	4	—	1
Utah	—	7	33	—	3	—	14	34	—	3	—	0	6	—	—
Wyoming§	1	1	4	1	1	—	1	5	—	—	—	0	1	—	—
Pacific	12	62	111	12	70	165	683	875	165	636	—	2	6	—	5
Alaska	1	1	5	1	1	5	10	17	5	10	—	0	3	—	2
California	8	42	82	8	55	119	597	718	119	557	—	0	5	—	—
Hawaii	—	0	2	—	—	—	12	24	—	16	—	0	1	—	—
Oregon§	3	9	17	3	14	35	23	63	35	5	—	1	5	—	3
Washington	—	9	45	—	—	6	32	142	6	48	—	0	1	—	—
American Samoa	—	0	0	—	N	—	0	2	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	2	13	—	—	—	0	0	—	—
Puerto Rico	—	5	21	—	—	—	5	23	—	5	—	0	1	—	—
U.S. Virgin Islands	—	0	0	—	—	—	1	3	—	—	—	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 2007 and 2008 are provisional.
† Data for *H. influenzae* (age <5 yrs for serotype b, nonserotype b, and unknown serotype) are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Hepatitis (viral, acute), by type† A: Current week	A: Previous 52 weeks Med	A: Previous 52 weeks Max	A: Cum 2008	A: Cum 2007	B: Current week	B: Previous 52 weeks Med	B: Previous 52 weeks Max	B: Cum 2008	B: Cum 2007	Legionellosis: Current week	Legionellosis: Previous 52 weeks Med	Legionellosis: Previous 52 weeks Max	Legionellosis: Cum 2008	Legionellosis: Cum 2007
United States	21	51	82	21	32	15	78	107	15	63	18	41	91	18	26
New England	—	2	6	—	1	—	1	5	—	—	1	2	14	1	1
Connecticut	—	0	3	—	—	—	0	5	—	—	—	0	5	—	—
Maine§	—	0	1	—	—	—	0	2	—	—	—	0	2	—	—
Massachusetts	—	1	4	—	—	—	0	1	—	—	—	0	3	—	—
New Hampshire	—	0	3	—	1	—	0	1	—	—	—	0	2	—	—
Rhode Island§	—	0	2	—	—	—	0	3	—	—	—	0	6	—	—
Vermont§	—	0	1	—	—	—	0	1	—	—	1	0	2	1	1
Mid. Atlantic	5	8	21	5	4	1	8	15	1	11	4	11	37	4	6
New Jersey	—	2	6	—	2	—	1	8	—	1	—	1	11	—	3
New York (Upstate)	—	1	5	—	—	—	1	7	—	2	—	4	16	—	—
New York City	—	3	9	—	—	—	2	6	—	4	—	2	11	—	2
Pennsylvania	5	2	5	5	2	1	3	8	1	4	4	5	21	4	1
E.N. Central	3	6	12	3	6	2	9	15	2	13	5	9	28	5	4
Illinois	—	2	5	—	3	—	2	6	—	2	—	1	12	—	2
Indiana	—	0	4	—	—	—	0	8	—	—	—	1	7	—	—
Michigan	2	1	5	2	3	—	2	8	—	7	1	3	10	1	2
Ohio	1	1	4	1	—	2	2	7	2	3	4	3	17	4	—
Wisconsin	—	0	3	—	—	—	0	3	—	1	—	0	1	—	—
W.N. Central	4	2	18	4	1	1	3	8	1	5	—	1	9	—	2
Iowa	—	1	4	—	1	—	0	3	—	—	—	0	2	—	—
Kansas	—	0	3	—	—	—	0	2	—	—	—	0	1	—	—
Minnesota	—	0	17	—	—	—	0	4	—	—	—	0	6	—	—
Missouri	2	0	2	2	—	—	1	5	—	3	—	1	3	—	1
Nebraska§	1	0	2	1	—	1	0	1	1	1	—	0	2	—	1
North Dakota	—	0	0	—	—	—	0	1	—	—	—	0	0	—	—
South Dakota	1	0	1	1	—	—	0	1	—	1	—	0	1	—	—
S. Atlantic	2	10	21	2	6	9	18	37	9	9	7	7	18	7	4
Delaware	—	0	1	—	—	—	0	2	—	—	—	0	2	—	—
District of Columbia	—	0	5	—	—	—	0	1	—	—	—	0	1	—	—
Florida	1	3	7	1	3	4	7	12	4	3	3	2	12	3	3
Georgia	1	1	4	1	1	4	2	7	4	4	1	1	2	1	—
Maryland§	—	1	5	—	—	1	2	6	1	1	3	1	5	3	1
North Carolina	—	0	9	—	—	—	0	16	—	—	—	0	4	—	—
South Carolina§	—	0	4	—	2	—	1	4	—	—	—	0	2	—	—
Virginia§	—	1	5	—	—	—	2	8	—	1	—	1	3	—	—
West Virginia	—	0	2	—	—	—	0	9	—	—	—	0	3	—	—
E.S. Central	1	2	5	1	5	1	7	14	1	13	1	2	6	1	4
Alabama§	—	0	4	—	—	1	2	6	1	2	—	0	1	—	1
Kentucky	1	0	2	1	1	—	1	7	—	—	1	1	3	1	1
Mississippi	—	0	4	—	4	—	0	8	—	8	—	0	0	—	—
Tennessee§	—	1	5	—	—	—	3	8	—	3	—	1	4	—	2
W.S. Central	—	4	15	—	1	—	17	44	—	1	—	2	7	—	—
Arkansas§	—	0	2	—	—	—	1	4	—	—	—	0	3	—	—
Louisiana	—	0	3	—	—	—	1	6	—	1	—	0	1	—	—
Oklahoma	—	0	8	—	—	—	1	38	—	—	—	0	2	—	—
Texas§	—	3	9	—	1	—	12	28	—	—	—	2	6	—	—
Mountain	—	4	13	—	3	1	4	7	1	4	—	2	6	—	5
Arizona	—	3	11	—	3	—	1	5	—	U	—	0	5	—	2
Colorado	—	0	2	—	—	1	0	3	1	—	—	0	2	—	—
Idaho§	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
Montana§	—	0	2	—	—	—	0	0	—	—	—	0	1	—	—
Nevada§	—	0	1	—	—	—	1	3	—	—	—	0	2	—	—
New Mexico§	—	0	1	—	—	—	0	2	—	1	—	0	2	—	2
Utah	—	0	2	—	—	—	0	2	—	—	—	0	3	—	—
Wyoming§	—	0	1	—	—	—	0	1	—	—	—	0	1	—	1
Pacific	6	11	32	6	5	—	10	17	—	7	—	3	7	—	—
Alaska	—	0	1	—	—	—	0	2	—	1	—	0	0	—	—
California	6	9	29	6	3	—	7	14	—	5	—	2	6	—	—
Hawaii	—	0	1	—	—	—	0	2	—	—	—	0	0	—	—
Oregon§	—	1	2	—	2	—	1	4	—	1	—	0	2	—	—
Washington	—	1	4	—	—	—	1	6	—	—	—	0	2	—	—
American Samoa	—	0	0	—	—	—	0	0	—	—	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	1	5	—	—	—	1	5	—	1	—	0	2	—	2
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Data for acute hepatitis C, viral are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Lyme disease					Malaria					Meningococcal disease, invasive† All serogroups				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	37	272	1,282	37	93	5	23	39	5	14	—	18	42	—	21
New England	—	40	301	—	16	—	1	4	—	1	—	1	3	—	1
Connecticut	—	11	214	—	—	—	0	1	—	—	—	0	1	—	—
Maine§	—	4	61	—	—	—	0	2	—	—	—	0	1	—	—
Massachusetts	—	2	31	—	10	—	0	3	—	1	—	0	2	—	1
New Hampshire	—	8	88	—	5	—	0	4	—	—	—	0	1	—	—
Rhode Island§	—	0	74	—	—	—	0	0	—	—	—	0	1	—	—
Vermont§	—	1	13	—	1	—	0	2	—	—	—	0	1	—	—
Mid. Atlantic	29	137	647	29	47	1	5	15	1	2	—	2	8	—	1
New Jersey	—	30	155	—	25	—	0	0	—	—	—	0	2	—	1
New York (Upstate)	—	54	191	—	—	—	1	5	—	—	—	1	3	—	—
New York City	—	1	25	—	1	—	3	8	—	2	—	0	4	—	—
Pennsylvania	29	51	321	29	21	1	1	4	1	—	—	1	5	—	—
E.N. Central	—	12	168	—	7	1	2	6	1	2	—	3	9	—	2
Illinois	—	1	15	—	—	—	0	6	—	1	—	1	3	—	—
Indiana	—	0	7	—	—	—	0	2	—	—	—	0	4	—	—
Michigan	—	0	5	—	1	—	0	2	—	—	—	0	3	—	—
Ohio	—	0	3	—	—	1	0	3	1	1	—	1	2	—	2
Wisconsin	—	10	149	—	6	—	0	2	—	—	—	0	2	—	—
W.N. Central	—	5	110	—	1	—	0	8	—	—	—	1	5	—	3
Iowa	—	1	11	—	1	—	0	1	—	—	—	0	3	—	—
Kansas	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
Minnesota	—	1	107	—	—	—	0	8	—	—	—	0	3	—	—
Missouri	—	0	4	—	—	—	0	1	—	—	—	0	3	—	3
Nebraska§	—	0	2	—	—	—	0	1	—	—	—	0	2	—	—
North Dakota	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
South Dakota	—	0	0	—	—	—	0	1	—	—	—	0	1	—	—
S. Atlantic	5	65	182	5	21	2	4	14	2	3	—	3	11	—	3
Delaware	1	12	34	1	10	—	0	1	—	—	—	0	1	—	—
District of Columbia	—	0	7	—	—	—	0	1	—	—	—	0	0	—	—
Florida	2	1	11	2	—	1	1	7	1	2	—	1	7	—	1
Georgia	—	0	3	—	—	1	0	3	1	1	—	0	3	—	2
Maryland§	2	32	113	2	11	—	1	5	—	—	—	0	2	—	—
North Carolina	—	0	8	—	—	—	0	4	—	—	—	0	4	—	—
South Carolina§	—	0	4	—	—	—	0	1	—	—	—	0	1	—	—
Virginia§	—	13	62	—	—	—	1	6	—	—	—	0	2	—	—
West Virginia	—	0	9	—	—	—	0	1	—	—	—	0	1	—	—
E.S. Central	—	1	5	—	—	—	1	3	—	1	—	1	4	—	4
Alabama§	—	0	3	—	—	—	0	1	—	—	—	0	2	—	—
Kentucky	—	0	2	—	—	—	0	1	—	—	—	0	2	—	—
Mississippi	—	0	1	—	—	—	0	1	—	1	—	0	4	—	4
Tennessee§	—	0	4	—	—	—	0	2	—	—	—	0	2	—	—
W.S. Central	—	1	6	—	—	—	1	7	—	1	—	2	7	—	—
Arkansas§	—	0	1	—	—	—	0	1	—	—	—	0	2	—	—
Louisiana	—	0	1	—	—	—	0	2	—	1	—	0	4	—	—
Oklahoma	—	0	0	—	—	—	0	2	—	—	—	0	3	—	—
Texas§	—	1	6	—	—	—	1	6	—	—	—	1	4	—	—
Mountain	1	0	3	1	—	1	1	6	1	1	—	1	4	—	—
Arizona	—	0	1	—	—	—	0	3	—	—	—	0	2	—	—
Colorado	1	0	1	1	—	1	0	2	1	1	—	0	2	—	—
Idaho§	—	0	2	—	—	—	0	2	—	—	—	0	2	—	—
Montana§	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
Nevada§	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
New Mexico§	—	0	1	—	—	—	0	1	—	—	—	0	1	—	—
Utah	—	0	2	—	—	—	0	3	—	—	—	0	2	—	—
Wyoming§	—	0	1	—	—	—	0	0	—	—	—	0	1	—	—
Pacific	2	2	10	2	1	—	3	9	—	3	—	4	12	—	7
Alaska	—	0	1	—	—	—	0	1	—	—	—	0	1	—	—
California	2	2	10	2	1	—	2	7	—	—	—	3	10	—	7
Hawaii	N	0	0	N	N	—	0	0	—	—	—	0	1	—	—
Oregon§	—	0	1	—	—	—	0	3	—	3	—	0	3	—	—
Washington	—	0	7	—	—	—	0	2	—	—	—	0	5	—	—
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	—	—	—	0	1	—	—
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Data for meningococcal disease, invasive caused by serogroups A, C, Y, & W-135; serogroup B; other serogroup; and unknown serogroup are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Pertussis					Rabies, animal					Rocky Mountain spotted fever				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	34	166	264	34	191	31	107	191	31	49	2	34	146	2	7
New England	—	25	45	—	45	—	11	22	—	9	—	0	1	—	—
Connecticut	—	1	5	—	3	—	4	10	—	4	—	0	0	—	—
Maine†	—	1	6	—	1	—	1	5	—	—	—	0	1	—	N
Massachusetts	—	19	37	—	37	—	0	0	—	N	—	0	1	—	—
New Hampshire	—	1	5	—	4	—	1	4	—	—	—	0	1	—	—
Rhode Island†	—	0	7	—	—	—	0	4	—	—	—	0	0	—	—
Vermont†	—	0	9	—	—	—	3	13	—	5	—	0	0	—	—
Mid. Atlantic	5	23	50	5	22	9	26	56	9	16	1	1	7	1	1
New Jersey	—	2	10	—	8	N	0	0	N	N	—	0	3	—	—
New York (Upstate)	1	9	31	1	5	9	9	20	9	N	—	0	1	—	—
New York City	—	2	6	—	6	—	1	5	—	3	—	0	3	—	1
Pennsylvania	4	7	21	4	3	—	16	44	—	13	1	0	3	1	—
E.N. Central	16	26	79	16	48	—	4	48	—	—	—	1	4	—	—
Illinois	—	3	13	—	13	—	1	15	—	—	—	0	3	—	—
Indiana	—	0	9	—	—	—	0	1	—	—	—	0	2	—	—
Michigan	—	4	16	—	4	—	1	27	—	—	—	0	1	—	—
Ohio	16	11	54	16	21	—	1	11	—	—	—	0	2	—	—
Wisconsin	—	0	24	—	10	N	0	0	N	N	—	0	0	—	—
W.N. Central	4	12	65	4	18	—	4	13	—	—	1	5	37	1	—
Iowa	—	2	10	—	7	—	0	3	—	—	—	0	4	—	—
Kansas	—	2	8	—	5	—	2	7	—	—	—	0	2	—	—
Minnesota	—	0	53	—	—	—	0	6	—	—	—	0	1	—	—
Missouri	2	2	9	2	1	—	0	3	—	—	1	5	29	1	—
Nebraska†	1	1	12	1	1	—	0	0	—	—	—	0	2	—	—
North Dakota	—	0	4	—	—	—	0	5	—	—	—	0	0	—	—
South Dakota	1	0	7	1	4	—	0	2	—	—	—	0	1	—	—
S. Atlantic	2	16	48	2	12	21	39	156	21	20	—	15	111	—	1
Delaware	—	0	2	—	—	—	0	0	—	—	—	0	2	—	—
District of Columbia	—	0	1	—	1	—	0	0	—	—	—	0	1	—	—
Florida	2	4	17	2	4	3	0	124	3	—	—	0	3	—	—
Georgia	—	0	3	—	1	11	5	12	11	5	—	1	6	—	—
Maryland†	—	2	6	—	3	—	7	18	—	5	—	1	4	—	1
North Carolina	—	3	34	—	—	7	9	19	7	9	—	5	96	—	—
South Carolina†	—	1	4	—	—	—	0	11	—	1	—	0	7	—	—
Virginia†	—	2	11	—	3	—	13	31	—	—	—	2	11	—	—
West Virginia	—	0	12	—	—	—	0	11	—	—	—	0	3	—	—
E.S. Central	1	6	35	1	15	—	3	6	—	1	—	5	16	—	5
Alabama†	1	1	6	1	3	—	0	0	—	—	—	1	10	—	3
Kentucky	—	0	4	—	—	—	0	3	—	—	—	0	2	—	—
Mississippi	—	1	32	—	10	—	0	1	—	—	—	0	2	—	1
Tennessee†	—	1	5	—	2	—	2	6	—	1	—	2	10	—	1
W.S. Central	—	19	48	—	1	—	1	23	—	1	—	1	30	—	—
Arkansas†	—	1	17	—	—	—	1	2	—	—	—	0	15	—	—
Louisiana	—	0	2	—	—	—	0	0	—	—	—	0	1	—	—
Oklahoma	—	0	26	—	—	—	0	22	—	1	—	0	20	—	—
Texas†	—	16	33	—	1	—	0	0	—	—	—	0	5	—	—
Mountain	5	21	39	5	19	—	3	14	—	1	—	0	4	—	—
Arizona	—	3	13	—	7	—	2	12	—	1	—	0	1	—	—
Colorado	5	6	14	5	8	—	0	0	—	—	—	0	2	—	—
Idaho†	—	0	5	—	—	—	0	0	—	—	—	0	1	—	—
Montana†	—	0	7	—	1	—	0	3	—	—	—	0	1	—	—
Nevada†	—	0	3	—	—	—	0	2	—	—	—	0	0	—	—
New Mexico†	—	1	7	—	1	—	0	2	—	—	—	0	1	—	—
Utah	—	6	27	—	—	—	0	2	—	—	—	0	0	—	—
Wyoming†	—	0	4	—	2	—	0	4	—	—	—	0	2	—	—
Pacific	1	12	54	1	11	1	4	10	1	1	—	0	2	—	—
Alaska	—	0	8	—	8	—	0	6	—	1	N	0	0	N	N
California	—	4	15	—	—	1	3	8	1	—	—	0	2	—	—
Hawaii	—	0	1	—	—	N	0	0	N	N	N	0	0	N	N
Oregon†	1	1	14	1	3	—	0	3	—	—	—	0	1	—	—
Washington	—	3	42	—	—	—	0	0	—	—	N	0	0	N	N
American Samoa	—	0	0	—	—	N	0	0	N	N	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	N	0	0	N	N
Puerto Rico	—	0	1	—	—	—	0	5	—	—	N	0	0	N	N
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Salmonellosis					Shiga toxin-producing *E. coli* (STEC)†					Shigellosis				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	195	754	1,298	195	954	5	67	207	5	94	132	351	549	132	193
New England	2	31	430	2	430	—	4	79	—	79	—	3	47	—	47
Connecticut	—	0	415	—	415	—	0	73	—	73	—	0	44	—	44
Maine§	—	2	13	—	—	—	0	4	—	1	—	0	4	—	—
Massachusetts	—	22	58	—	13	—	2	10	—	5	—	3	8	—	3
New Hampshire	2	3	10	2	2	—	0	4	—	—	—	0	1	—	—
Rhode Island§	—	1	15	—	—	—	0	2	—	—	—	0	9	—	—
Vermont§	—	1	5	—	—	—	0	3	—	—	—	0	1	—	—
Mid. Atlantic	21	105	187	21	84	—	7	25	—	3	2	13	40	2	4
New Jersey	—	16	42	—	28	—	1	4	—	2	—	2	10	—	—
New York (Upstate)	2	27	63	2	—	—	3	12	—	—	—	3	15	—	—
New York City	—	25	51	—	27	—	1	5	—	—	—	5	11	—	3
Pennsylvania	19	35	69	19	29	—	2	11	—	1	2	2	21	2	1
E.N. Central	24	102	254	24	72	—	9	35	—	5	17	44	133	17	23
Illinois	—	32	187	—	31	—	1	10	—	—	—	12	24	—	19
Indiana	—	13	34	—	—	—	1	13	—	—	—	2	32	—	—
Michigan	—	18	41	—	9	—	1	8	—	2	—	1	7	—	—
Ohio	22	25	64	22	11	—	2	9	—	2	17	19	104	17	3
Wisconsin	2	15	50	2	21	—	3	11	—	1	—	4	13	—	1
W.N. Central	7	49	103	7	24	—	12	38	—	—	3	33	80	3	14
Iowa	—	9	18	—	8	—	2	13	—	—	—	2	6	—	1
Kansas	—	7	20	—	2	—	1	4	—	—	—	0	3	—	—
Minnesota	—	12	41	—	—	—	3	17	—	—	—	4	12	—	—
Missouri	5	15	29	5	4	—	2	12	—	—	3	22	72	3	12
Nebraska§	2	5	13	2	9	—	2	6	—	—	—	0	2	—	—
North Dakota	—	0	9	—	—	—	0	1	—	—	—	0	3	—	—
South Dakota	—	3	11	—	1	—	0	5	—	—	—	0	30	—	1
S. Atlantic	109	226	431	109	94	4	13	39	4	4	48	81	153	48	54
Delaware	—	2	8	—	—	—	0	2	—	1	—	0	2	—	1
District of Columbia	—	0	4	—	1	—	0	1	—	—	—	0	1	—	—
Florida	69	84	181	69	27	4	3	18	4	—	26	41	75	26	32
Georgia	25	30	86	25	27	—	1	6	—	1	18	27	84	18	17
Maryland§	8	15	43	8	5	—	1	6	—	1	1	2	7	1	1
North Carolina	—	28	191	—	17	—	1	24	—	—	—	0	10	—	—
South Carolina§	7	18	51	7	11	—	0	3	—	—	3	3	20	3	2
Virginia§	—	20	39	—	6	—	3	9	—	1	—	3	14	—	1
West Virginia	—	4	20	—	—	—	0	3	—	—	—	0	36	—	—
E.S. Central	14	61	142	14	134	1	4	26	1	2	23	49	177	23	21
Alabama§	7	16	49	7	11	—	1	19	—	—	9	13	41	9	7
Kentucky	3	10	23	3	11	1	1	12	1	1	6	6	35	6	3
Mississippi	—	15	101	—	101	—	0	1	—	1	5	14	111	5	7
Tennessee§	4	17	34	4	11	—	2	10	—	—	3	4	32	3	4
W.S. Central	—	77	248	—	8	—	3	12	—	—	28	41	135	28	1
Arkansas§	—	13	51	—	—	—	0	3	—	—	—	2	6	—	—
Louisiana	—	15	42	—	7	—	0	2	—	—	—	9	22	—	1
Oklahoma	—	9	43	—	—	—	0	3	—	—	1	2	8	1	—
Texas§	—	40	135	—	1	—	2	10	—	—	27	25	126	27	—
Mountain	14	49	86	14	44	—	9	42	—	—	7	17	41	7	13
Arizona	4	17	41	4	19	—	2	8	—	—	5	10	30	5	4
Colorado	5	10	24	5	16	—	1	17	—	—	1	2	6	1	1
Idaho§	2	3	9	2	2	—	1	16	—	—	—	0	2	—	—
Montana§	—	2	9	—	2	—	0	0	—	—	—	0	2	—	1
Nevada§	—	4	12	—	2	—	0	3	—	—	—	0	10	—	—
New Mexico§	—	5	13	—	1	—	0	3	—	—	—	2	6	—	1
Utah	—	4	17	—	1	—	1	9	—	—	—	1	5	—	—
Wyoming§	3	1	5	3	1	—	0	0	—	—	1	0	6	1	6
Pacific	4	108	193	4	64	—	9	38	—	1	4	27	71	4	16
Alaska	—	1	5	—	1	N	0	0	N	N	—	0	2	—	—
California	4	80	135	4	57	—	5	33	—	N	2	21	61	2	14
Hawaii	—	1	13	—	—	—	0	1	—	—	1	0	3	1	—
Oregon§	—	6	16	—	6	—	1	11	—	1	1	1	6	1	2
Washington	—	12	47	—	—	—	1	20	—	—	—	2	20	—	—
American Samoa	—	0	0	—	—	—	0	0	—	N	1	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	N	0	0	N	N	—	0	0	—	—
Puerto Rico	—	13	55	—	6	—	0	0	—	—	—	0	4	—	4
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Includes *E. coli* O157:H7; Shiga toxin-positive, serogroup non-O157; and Shiga toxin-positive, not serogrouped.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Streptococcal disease, invasive, group A					*Streptococcus pneumoniae*, invasive disease, nondrug resistant† Age <5 years				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max		
United States	37	83	167	37	83	15	34	57	15	27
New England	—	5	28	—	4	—	2	8	—	4
Connecticut	—	0	22	—	—	—	0	2	—	—
Maine§	—	0	3	—	2	—	0	1	—	—
Massachusetts	—	3	12	—	2	—	1	5	—	2
New Hampshire	—	0	4	—	—	—	0	2	—	1
Rhode Island§	—	0	1	—	—	—	0	1	—	—
Vermont§	—	0	2	—	—	—	0	1	—	1
Mid. Atlantic	4	15	38	4	14	—	4	37	—	2
New Jersey	—	2	10	—	3	—	1	5	—	1
New York (Upstate)	1	5	20	1	1	—	2	9	—	—
New York City	—	4	13	—	3	—	1	35	—	1
Pennsylvania	3	5	11	3	7	N	0	0	N	N
E.N. Central	4	14	34	4	24	2	4	13	2	11
Illinois	—	4	13	—	11	—	1	6	—	3
Indiana	—	2	10	—	—	—	0	6	—	—
Michigan	1	3	10	1	3	1	1	5	1	4
Ohio	3	4	14	3	10	1	1	5	1	2
Wisconsin	—	0	5	—	—	—	0	2	—	2
W.N. Central	1	5	32	1	5	3	2	7	3	1
Iowa	—	0	0	—	—	—	0	0	—	—
Kansas	—	0	3	—	1	—	0	1	—	—
Minnesota	—	0	29	—	—	—	1	5	—	—
Missouri	1	2	4	1	4	1	0	2	1	1
Nebraska§	—	0	3	—	—	2	0	3	2	—
North Dakota	—	0	3	—	—	—	0	1	—	—
South Dakota	—	0	2	—	—	—	0	0	—	—
S. Atlantic	17	21	49	17	16	4	6	14	4	4
Delaware	—	0	1	—	—	—	0	0	—	—
District of Columbia	—	0	3	—	—	—	0	0	—	—
Florida	5	6	16	5	—	1	1	5	1	—
Georgia	3	4	12	3	5	—	0	5	—	1
Maryland§	5	4	9	5	5	1	1	5	1	2
North Carolina	—	1	22	—	—	—	0	0	—	—
South Carolina§	4	1	7	4	6	2	1	4	2	1
Virginia§	—	2	11	—	—	—	0	4	—	—
West Virginia	—	0	3	—	—	—	0	1	—	—
E.S. Central	—	4	13	—	7	—	2	6	—	2
Alabama§	N	0	0	N	N	N	0	0	N	N
Kentucky	—	1	3	—	2	N	0	0	N	N
Mississippi	N	0	0	N	N	—	0	2	—	2
Tennessee§	—	3	13	—	5	—	2	6	—	—
W.S. Central	1	6	19	1	—	1	5	17	1	2
Arkansas§	—	0	2	—	—	—	0	1	—	—
Louisiana	—	0	4	—	—	—	0	4	—	1
Oklahoma	1	1	5	1	—	1	1	4	1	1
Texas§	—	4	11	—	—	—	2	13	—	—
Mountain	10	9	21	10	11	3	4	12	3	1
Arizona	2	4	10	2	1	—	2	8	—	1
Colorado	8	3	8	8	5	3	1	4	3	—
Idaho§	—	0	2	—	—	—	0	1	—	—
Montana§	N	0	0	N	N	N	0	0	N	N
Nevada§	—	0	1	—	—	—	0	1	—	—
New Mexico§	—	1	4	—	4	—	0	4	—	—
Utah	—	2	6	—	1	—	0	2	—	—
Wyoming§	—	0	1	—	—	—	0	0	—	—
Pacific	—	3	7	—	2	2	0	4	2	—
Alaska	—	0	3	—	N	2	0	4	2	N
California	N	0	0	N	N	N	0	0	N	N
Hawaii	—	2	5	—	2	—	0	1	—	—
Oregon§	N	0	0	N	N	N	0	0	N	N
Washington	N	0	0	N	N	N	0	0	N	N
American Samoa	—	0	0	—	—	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	N	0	0	N	N
Puerto Rico	—	0	0	—	—	N	0	0	N	N
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 2007 and 2008 are provisional.
† Includes cases of invasive pneumococcal disease, in children aged <5 years, caused by *S. pneumoniae*, which is susceptible or for which susceptibility testing is not available (NNDSS event code 11717).
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	*Streptococcus pneumoniae*, invasive disease, drug resistant†										Syphilis, primary and secondary				
	All ages					Age <5 years									
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	44	39	97	44	79	3	9	23	3	9	86	205	278	86	134
New England	1	1	7	1	5	—	0	2	—	—	—	5	14	—	2
Connecticut	—	0	5	—	3	—	0	2	—	—	—	0	3	—	—
Maine§	—	0	1	—	1	—	0	1	—	—	—	0	2	—	—
Massachusetts	—	0	0	—	—	—	0	0	—	—	—	3	8	—	2
New Hampshire	—	0	0	—	—	—	0	0	—	—	—	0	3	—	—
Rhode Island§	—	0	3	—	—	—	0	1	—	—	—	0	5	—	—
Vermont§	1	0	2	1	1	—	0	1	—	—	—	0	5	—	—
Mid. Atlantic	3	2	9	3	6	—	0	5	—	—	16	33	46	16	30
New Jersey	—	0	0	—	—	—	0	0	—	—	—	4	8	—	5
New York (Upstate)	—	1	5	—	—	—	0	4	—	—	—	3	7	—	1
New York City	—	0	0	—	—	—	0	0	—	—	16	18	35	16	10
Pennsylvania	3	1	6	3	6	—	0	2	—	—	—	8	17	—	14
E.N. Central	7	11	31	7	30	—	2	8	—	1	11	15	25	11	17
Illinois	—	1	8	—	8	—	1	5	—	—	—	7	14	—	12
Indiana	—	3	11	—	—	—	0	4	—	—	1	1	6	1	—
Michigan	—	0	1	—	—	—	0	1	—	—	—	2	9	—	—
Ohio	7	6	23	7	22	—	1	3	—	1	9	3	9	9	4
Wisconsin	N	0	0	N	N	—	0	0	—	—	1	1	4	1	1
W.N. Central	3	2	49	3	2	—	0	3	—	1	2	7	13	2	1
Iowa	—	0	0	—	—	—	0	0	—	—	—	0	2	—	—
Kansas	—	0	11	—	—	—	0	2	—	—	—	0	2	—	—
Minnesota	—	0	46	—	—	—	0	3	—	—	—	1	4	—	1
Missouri	3	1	5	3	1	—	0	1	—	—	2	4	10	2	—
Nebraska§	—	0	1	—	—	—	0	0	—	—	—	0	1	—	—
North Dakota	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
South Dakota	—	0	1	—	1	—	0	1	—	1	—	0	3	—	—
S. Atlantic	23	19	39	23	30	3	4	12	3	7	27	49	85	27	21
Delaware	—	0	1	—	—	—	0	1	—	—	—	0	3	—	—
District of Columbia	—	0	1	—	—	—	0	0	—	—	—	3	12	—	—
Florida	18	11	27	18	19	2	2	7	2	5	7	16	32	7	10
Georgia	5	6	18	5	11	1	1	5	1	2	—	8	31	—	3
Maryland§	—	0	1	—	—	—	0	0	—	—	6	6	15	6	6
North Carolina	—	0	0	—	—	—	0	0	—	—	13	5	23	13	—
South Carolina§	—	0	0	—	—	—	0	0	—	—	—	2	11	—	2
Virginia§	N	0	0	N	N	—	0	0	—	—	1	4	16	1	—
West Virginia	—	1	8	—	—	—	0	1	—	—	—	0	1	—	—
E.S. Central	7	3	9	7	3	—	1	3	—	—	7	18	31	7	11
Alabama§	N	0	0	N	N	—	0	0	—	—	2	7	17	2	5
Kentucky	—	0	2	—	—	—	0	1	—	—	—	1	7	—	—
Mississippi	—	0	0	—	—	—	0	0	—	—	—	1	9	—	—
Tennessee§	7	2	9	7	3	—	0	3	—	—	5	7	15	5	6
W.S. Central	—	2	12	—	2	—	0	3	—	—	12	36	55	12	11
Arkansas§	—	0	1	—	—	—	0	0	—	—	1	2	10	1	—
Louisiana	—	1	4	—	2	—	0	2	—	—	—	10	23	—	1
Oklahoma	—	0	10	—	—	—	0	2	—	—	1	1	4	1	—
Texas§	—	0	0	—	—	—	0	0	—	—	10	22	39	10	10
Mountain	—	1	5	—	1	—	0	2	—	—	1	8	25	1	5
Arizona	—	0	0	—	—	—	0	0	—	—	—	4	17	—	1
Colorado	—	0	0	—	—	—	0	0	—	—	1	1	3	1	—
Idaho§	N	0	0	N	N	—	0	0	—	—	—	0	1	—	—
Montana§	—	0	0	—	—	—	0	0	—	—	—	0	3	—	—
Nevada§	—	0	3	—	1	—	0	2	—	—	—	2	6	—	2
New Mexico§	—	0	1	—	—	—	0	0	—	—	—	1	4	—	1
Utah	—	0	5	—	—	—	0	2	—	—	—	0	2	—	1
Wyoming§	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
Pacific	—	0	0	—	—	—	0	0	—	—	10	40	61	10	36
Alaska	—	0	0	—	N	—	0	0	—	—	—	0	1	—	—
California	N	0	0	N	N	—	0	0	—	—	1	37	58	1	35
Hawaii	—	0	0	—	—	—	0	0	—	—	—	0	2	—	—
Oregon§	N	0	0	N	N	—	0	0	—	—	2	0	2	2	—
Washington	N	0	0	N	N	—	0	0	—	—	7	2	12	7	1
American Samoa	N	0	0	N	N	—	0	1	—	—	—	0	4	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	0	—	—	—	3	10	—	—
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Includes cases of invasive pneumococcal disease caused by drug-resistant *S. pneumoniae* (DRSP) (NNDSS event code 11720).
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending January 5, 2008, and January 6, 2007 (1st Week)*

Reporting area	Varicella (chickenpox)					West Nile virus disease†									
						Neuroinvasive					Nonneuroinvasive§				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max				Med	Max		
United States	255	622	1,277	255	519	—	1	141	—	—	—	2	299	—	—
New England	8	13	47	8	22	—	0	2	—	—	—	0	2	—	—
Connecticut	—	0	1	—	—	—	0	2	—	—	—	0	1	—	—
Maine¶	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Massachusetts	—	0	0	—	—	—	0	2	—	—	—	0	2	—	—
New Hampshire	4	6	17	4	13	—	0	0	—	—	—	0	0	—	—
Rhode Island¶	—	0	0	—	—	—	0	0	—	—	—	0	1	—	—
Vermont¶	4	5	38	4	9	—	0	0	—	—	—	0	0	—	—
Mid. Atlantic	43	81	168	43	111	—	0	3	—	—	—	0	3	—	—
New Jersey	N	0	0	N	N	—	0	1	—	—	—	0	0	—	—
New York (Upstate)	N	0	0	N	N	—	0	1	—	—	—	0	1	—	—
New York City	—	0	0	—	—	—	0	3	—	—	—	0	3	—	—
Pennsylvania	43	81	168	43	111	—	0	1	—	—	—	0	1	—	—
E.N. Central	71	174	568	71	237	—	0	18	—	—	—	0	12	—	—
Illinois	1	3	11	1	6	—	0	13	—	—	—	0	8	—	—
Indiana	N	0	0	N	N	—	0	4	—	—	—	0	2	—	—
Michigan	10	83	250	10	97	—	0	5	—	—	—	0	0	—	—
Ohio	60	79	449	60	98	—	0	4	—	—	—	0	3	—	—
Wisconsin	—	12	80	—	36	—	0	2	—	—	—	0	2	—	—
W.N. Central	8	26	114	8	26	—	0	41	—	—	—	1	117	—	—
Iowa	N	0	0	N	N	—	0	4	—	—	—	0	3	—	—
Kansas	—	8	52	—	11	—	0	3	—	—	—	0	7	—	—
Minnesota	—	0	0	—	—	—	0	9	—	—	—	0	12	—	—
Missouri	8	13	78	8	10	—	0	9	—	—	—	0	3	—	—
Nebraska¶	N	0	0	N	N	—	0	5	—	—	—	0	15	—	—
North Dakota	—	0	60	—	—	—	0	11	—	—	—	0	49	—	—
South Dakota	—	1	14	—	5	—	0	9	—	—	—	0	32	—	—
S. Atlantic	71	91	214	71	72	—	0	12	—	—	—	0	6	—	—
Delaware	—	1	4	—	2	—	0	1	—	—	—	0	0	—	—
District of Columbia	—	0	8	—	—	—	0	0	—	—	—	0	0	—	—
Florida	30	26	76	30	N	—	0	1	—	—	—	0	0	—	—
Georgia	N	0	0	N	N	—	0	8	—	—	—	0	5	—	—
Maryland¶	N	0	0	N	N	—	0	2	—	—	—	0	2	—	—
North Carolina	—	0	0	—	—	—	0	1	—	—	—	0	1	—	—
South Carolina¶	6	17	72	6	14	—	0	2	—	—	—	0	1	—	—
Virginia¶	15	19	85	15	9	—	0	1	—	—	—	0	1	—	—
West Virginia	20	22	58	20	47	—	0	0	—	—	—	0	0	—	—
E.S. Central	10	10	78	10	15	—	0	11	—	—	—	0	14	—	—
Alabama¶	10	10	78	10	13	—	0	2	—	—	—	0	1	—	—
Kentucky	N	0	0	N	N	—	0	1	—	—	—	0	0	—	—
Mississippi	—	0	2	—	2	—	0	7	—	—	—	0	12	—	—
Tennessee¶	N	0	0	N	N	—	0	1	—	—	—	0	2	—	—
W.S. Central	34	148	521	34	23	—	0	34	—	—	—	0	18	—	—
Arkansas¶	—	9	46	—	—	—	0	5	—	—	—	0	2	—	—
Louisiana	—	2	11	—	11	—	0	5	—	—	—	0	3	—	—
Oklahoma	—	0	0	—	N	—	0	11	—	—	—	0	7	—	—
Texas¶	34	140	475	34	12	—	0	18	—	—	—	0	10	—	—
Mountain	9	50	130	9	13	—	0	36	—	—	—	1	143	—	—
Arizona	—	0	0	—	—	—	0	8	—	—	—	0	10	—	—
Colorado	9	21	62	9	5	—	0	17	—	—	—	0	65	—	—
Idaho¶	N	0	0	N	N	—	0	3	—	—	—	0	22	—	—
Montana¶	—	7	40	—	N	—	0	10	—	—	—	0	30	—	—
Nevada¶	—	0	1	—	—	—	0	1	—	—	—	0	3	—	—
New Mexico¶	—	5	37	—	5	—	0	8	—	—	—	0	6	—	—
Utah	—	10	72	—	3	—	0	8	—	—	—	0	8	—	—
Wyoming¶	—	0	9	—	—	—	0	4	—	—	—	0	33	—	—
Pacific	1	0	9	1	—	—	0	18	—	—	—	0	23	—	—
Alaska	1	0	9	1	N	—	0	0	—	—	—	0	0	—	—
California	—	0	0	—	N	—	0	17	—	—	—	0	21	—	—
Hawaii	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
Oregon¶	N	0	0	N	N	—	0	3	—	—	—	0	4	—	—
Washington	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	3	24	—	3	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	11	37	—	2	—	0	0	—	—	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	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 2007 and 2008 are provisional.
† Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for California serogroup, eastern equine, Powassan, St. Louis, and western equine diseases are available in Table I.
§ Not notifiable in all states. Data from states where the condition is not notifiable are excluded from this table, except in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at http://www.cdc.gov/epo/dphsi/phs/infdis.htm.
¶ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE III. Deaths in 122 U.S. cities,* week ending January 5, 2008 (1st Week)

Reporting Area	All causes, by age (years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
New England	560	390	129	25	9	7	33
Boston, MA	143	99	35	4	1	4	9
Bridgeport, CT	39	30	7	2	—	—	4
Cambridge, MA	21	17	4	—	—	—	—
Fall River, MA	20	15	3	1	—	1	3
Hartford, CT	53	29	17	5	2	—	3
Lowell, MA	21	13	5	3	—	—	1
Lynn, MA	18	13	5	—	—	—	—
New Bedford, MA	26	19	6	—	1	—	1
New Haven, CT	24	16	6	1	—	1	1
Providence, RI	55	41	9	3	1	1	1
Somerville, MA	3	2	—	1	—	—	—
Springfield, MA	41	26	12	1	2	—	4
Waterbury, CT	36	25	10	—	1	—	—
Worcester, MA	60	45	10	4	1	—	6
Mid. Atlantic	2,108	1,475	456	113	26	36	148
Albany, NY	43	29	10	3	1	—	1
Allentown, PA	18	14	3	1	—	—	1
Buffalo, NY	106	70	26	7	2	1	6
Camden, NJ	45	26	14	3	1	1	5
Elizabeth, NJ	19	14	3	1	—	1	1
Erie, PA	31	23	7	—	—	1	2
Jersey City, NJ	26	18	6	—	2	—	8
New York City, NY	1,073	763	229	51	12	16	61
Newark, NJ	23	16	5	2	—	—	4
Paterson, NJ	26	18	3	3	1	1	4
Philadelphia, PA	269	164	70	26	3	6	7
Pittsburgh, PA§	35	18	15	2	—	—	4
Reading, PA	25	22	2	1	—	—	2
Rochester, NY	133	107	17	5	2	2	22
Schenectady, NY	19	14	5	—	—	—	4
Scranton, PA	32	22	10	—	—	—	4
Syracuse, NY	124	90	21	5	1	7	10
Trenton, NJ	16	12	2	2	—	—	—
Utica, NY	19	16	2	1	—	—	1
Yonkers, NY	26	19	6	—	1	—	1
E.N. Central	1,782	1,219	384	100	37	42	129
Akron, OH	61	45	12	1	—	3	4
Canton, OH	55	47	4	2	—	2	5
Chicago, IL	310	185	85	28	6	6	28
Cincinnati, OH	88	59	18	3	5	3	12
Cleveland, OH	203	151	41	4	3	4	11
Columbus, OH	153	96	40	10	4	3	8
Dayton, OH	106	81	22	3	—	—	5
Detroit, MI	147	86	40	16	3	2	6
Evansville, IN	37	28	6	2	1	—	4
Fort Wayne, IN	52	30	14	2	3	3	2
Gary, IN	10	5	3	2	—	—	—
Grand Rapids, MI	57	40	9	3	2	3	7
Indianapolis, IN	157	117	27	5	1	7	17
Lansing, MI	46	30	9	5	2	—	2
Milwaukee, WI	88	56	20	8	1	3	5
Peoria, IL	U	U	U	U	U	U	U
Rockford, IL	44	33	5	3	2	1	3
South Bend, IN	30	22	7	1	—	—	—
Toledo, OH	79	59	14	1	4	1	6
Youngstown, OH	59	49	8	1	—	1	4
W.N. Central	599	397	134	31	14	22	40
Des Moines, IA	69	45	15	5	2	2	3
Duluth, MN	31	26	5	—	—	—	6
Kansas City, KS	18	10	7	—	—	1	2
Kansas City, MO	76	54	16	5	—	1	3
Lincoln, NE	53	35	15	2	1	—	6
Minneapolis, MN	63	45	10	1	2	5	4
Omaha, NE	68	51	11	2	—	4	8
St. Louis, MO	107	55	29	9	8	5	2
St. Paul, MN	57	39	10	4	1	3	4
Wichita, KS	57	37	16	3	—	1	2
S. Atlantic	1,233	746	332	106	28	21	71
Atlanta, GA	80	44	21	10	2	3	2
Baltimore, MD	154	87	50	14	2	1	15
Charlotte, NC	133	88	32	8	4	1	16
Jacksonville, FL	155	91	42	18	2	2	9
Miami, FL	87	48	22	11	6	—	2
Norfolk, VA	46	34	7	2	—	3	2
Richmond, VA	158	86	53	15	1	3	7
Savannah, GA	69	48	16	3	1	1	5
St. Petersburg, FL	53	39	10	2	—	2	4
Tampa, FL	178	112	48	12	4	2	6
Washington, D.C.	100	54	28	10	5	3	2
Wilmington, DE	20	15	3	1	1	—	1
E.S. Central	665	448	143	38	22	14	41
Birmingham, AL	146	101	31	4	5	5	11
Chattanooga, TN	57	42	12	2	—	1	1
Knoxville, TN	81	55	19	5	2	—	6
Lexington, KY	38	27	6	5	—	—	1
Memphis, TN	96	60	20	8	5	3	8
Mobile, AL	90	55	24	6	5	—	5
Montgomery, AL	8	6	1	—	—	1	—
Nashville, TN	149	102	30	8	5	4	9
W.S. Central	1,140	714	295	83	27	21	58
Austin, TX	87	54	18	7	6	2	6
Baton Rouge, LA	12	6	3	2	1	—	—
Corpus Christi, TX	44	30	10	3	1	—	4
Dallas, TX	153	92	52	7	1	1	5
El Paso, TX	88	62	15	7	4	—	4
Fort Worth, TX	93	58	28	5	—	2	9
Houston, TX	257	151	66	26	5	9	8
Little Rock, AR	64	34	23	5	2	—	2
New Orleans, LA¶	U	U	U	U	U	U	U
San Antonio, TX	176	114	45	11	1	5	11
Shreveport, LA	45	32	7	2	2	2	2
Tulsa, OK	121	81	28	8	4	—	7
Mountain	957	613	217	64	31	31	66
Albuquerque, NM	98	70	14	8	5	1	12
Boise, ID	45	34	9	1	—	1	5
Colorado Springs, CO	54	35	14	2	2	1	7
Denver, CO	79	48	22	7	—	2	5
Las Vegas, NV	169	102	44	14	5	4	9
Ogden, UT	44	28	9	4	3	—	1
Phoenix, AZ	160	90	40	11	7	11	7
Pueblo, CO	30	18	9	3	—	—	2
Salt Lake City, UT	144	95	29	8	5	7	8
Tucson, AZ	134	93	27	6	4	4	10
Pacific	1,449	1,018	310	77	22	22	131
Berkeley, CA	13	9	3	1	—	—	1
Fresno, CA	158	115	31	7	3	2	15
Glendale, CA	19	14	5	—	—	—	4
Honolulu, HI	43	32	8	2	1	—	3
Long Beach, CA	72	49	13	7	2	1	6
Los Angeles, CA	235	168	43	16	5	3	24
Pasadena, CA	17	13	4	—	—	—	4
Portland, OR	93	56	29	7	—	1	7
Sacramento, CA	U	U	U	U	U	U	U
San Diego, CA	143	104	30	3	2	4	12
San Francisco, CA	94	67	23	2	1	1	10
San Jose, CA	190	144	28	15	—	3	20
Santa Cruz, CA	28	18	8	—	1	1	1
Seattle, WA	143	85	42	7	4	5	11
Spokane, WA	50	35	13	—	1	1	5
Tacoma, WA	151	109	30	10	2	—	8
Total	10,493**	7,020	2,400	637	216	216	717

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.

TABLE IV. Provisional cases of selected notifiable disease,* United States, quarter ending December 29, 2007 (52nd Week)

Reporting area	Tuberculosis				
	Current quarter	Previous 4 quarters Min	Previous 4 quarters Max	Cum 2007	Cum 2006
United States	2,060	2,060	2,940	10,363	13,303
New England	12	12	54	128	261
Connecticut	7	7	28	75	89
Maine	4	3	7	18	16
Massachusetts	—	0	0	—	104
New Hampshire	—	0	3	4	17
Rhode Island	—	0	19	28	26
Vermont	1	0	1	3	9
Mid. Atlantic	452	387	536	1,876	2,114
New Jersey	98	80	124	415	508
New York (Upstate)	62	47	68	225	316
New York City	214	213	269	958	953
Pennsylvania	78	46	82	278	337
E.N. Central	234	232	295	1,017	1,224
Illinois	116	116	137	503	569
Indiana	—	0	7	7	125
Michigan	26	26	74	173	221
Ohio	65	52	66	246	239
Wisconsin	27	14	29	88	70
W.N. Central	103	99	131	456	502
Iowa	1	1	12	29	40
Kansas	4	4	19	53	91
Minnesota	58	45	67	223	217
Missouri	32	26	32	114	106
Nebraska	5	0	12	24	25
North Dakota	—	0	0	—	9
South Dakota	3	2	6	13	14
S. Atlantic	479	479	654	2,323	2,755
Delaware	—	0	6	10	30
District of Columbia	—	0	11	12	67
Florida	159	159	275	837	1,038
Georgia	42	42	251	542	503
Maryland	67	56	77	262	168
North Carolina	117	61	117	338	374
South Carolina	—	0	16	28	222
Virginia	88	37	88	272	332
West Virginia	6	4	6	22	21
E.S. Central	165	112	175	603	672
Alabama	42	35	48	166	196
Kentucky	25	17	36	103	84
Mississippi	29	22	42	119	113
Tennessee	69	32	69	215	279
W.S. Central	212	212	459	1,495	1,831
Arkansas	19	19	33	94	102
Louisiana	—	0	0	—	—
Oklahoma	22	22	44	145	144
Texas	171	171	387	1,256	1,585
Mountain	110	71	110	369	636
Arizona	80	23	80	238	314
Colorado	9	0	17	31	124
Idaho	—	0	0	—	—
Montana	—	0	0	—	12
Nevada	—	0	16	16	101
New Mexico	14	4	16	48	48
Utah	7	6	14	36	34
Wyoming	—	0	0	—	3
Pacific	293	293	696	2,096	3,308
Alaska	11	9	15	46	70
California	269	269	623	1,840	2,779
Hawaii	13	0	13	13	115
Oregon	—	0	0	—	81
Washington	—	0	70	197	263
American Samoa	—	0	3	3	2
C.N.M.I.	—	—	—	—	U
Guam	—	0	0	—	54
Puerto Rico	6	6	29	69	112
U.S. Virgin Islands	—	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. Min: Minimum. Max: Maximum.
* AIDS and HIV/AIDS data are not updated for this quarter because of upgrading of the national HIV/AIDS surveillance data management system.

MMWR™
QuickGuide

Recommended Immunization Schedules for Persons Aged 0–18 Years — United States, 2008

Weekly January 11, 2008 / Vol. 57 / No. 1

The Advisory Committee on Immunization Practices (ACIP) annually publishes a recommended immunization schedule for persons aged 0–18 years to reflect changes in vaccine formulations and current recommendations for the use of licensed vaccines. Changes to the previous schedule (*1*) are as follows:

- The pneumococcal conjugate vaccine (PCV) footnote reflects updated recommendations for incompletely vaccinated children aged 24–59 months, including those with underlying medical conditions (*2*).
- Recommendations for use of the live attenuated influenza vaccine (LAIV) now include healthy children aged as young as 2 years. LAIV should not be administered to children aged <5 years with recurrent wheezing (*3*). Children aged <9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season, but only received 1 dose, should have 2 doses of vaccine, at least 4 weeks apart. Other updates are included (*4*).
- For meningococcal vaccines, changes affect certain children aged 2–10 years (*5*). Vaccinating with meningococcal conjugate vaccine (MCV4) is preferred to meningococcal polysaccharide vaccine (MPSV4) for children at increased risk for meningococcal disease, including children who are traveling to or residents of countries in which the disease is hyperendemic or epidemic, children who have terminal complement component deficiencies, and children who have anatomic or functional asplenia. The catch-up schedule for youths aged 13–18 years has been updated. MPSV4 is an acceptable alternative for short-term (i.e., 3–5 years) protection against meningococcal disease for persons aged 2–18 years (*6*).
- The tetanus and diphtheria toxoids/tetanus and diphtheria toxoids and acellular pertussis vaccine (Td/Tdap) catch-up schedule for persons aged 7–18 years who received their first dose before age 12 months now indicates that these youths should receive 4 doses, with at least 4 weeks (not 8 weeks) between doses 2 and 3.
- The catch-up bars for hepatitis B and *Haemophilus influenzae* type b conjugate vaccine have been deleted on the routine schedule for persons aged 0–6 years (Figure 1). The figure title refers users to the catch-up schedule (Table) for patients who fall behind or start late with vaccinations.

The National Childhood Vaccine Injury Act requires that health-care providers provide parents or patients with copies of Vaccine Information Statements before administering each dose of the vaccines listed in the schedule. Additional information is available from state health departments and from CDC at http://www.cdc.gov/vaccines/pubs/vis/default.htm.

Detailed recommendations for using vaccines are available from package inserts, ACIP statements (available at http://www.cdc.gov/vaccines/pubs/acip-list.htm), and the *2006 Red Book* (*7*). Guidance regarding the Vaccine Adverse Event Reporting System form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

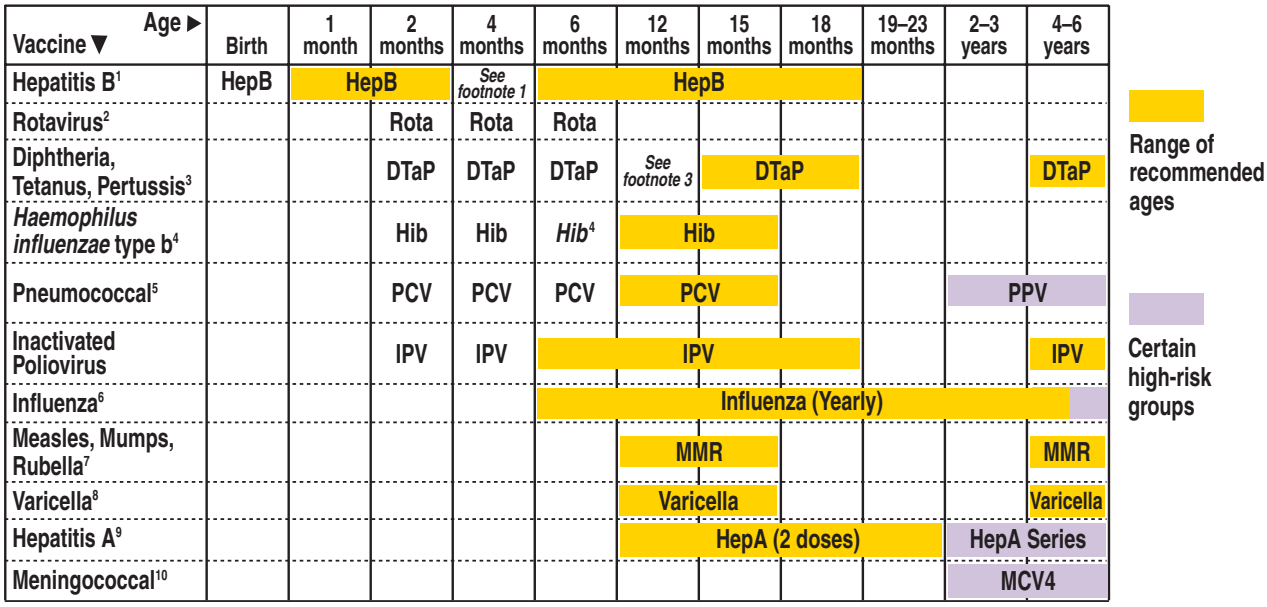
The recommended immunization schedules for persons aged 0–18 years and the catch-up immunization schedule for 2008 have been approved by the Advisory Committee on Immunization Practices, the American Academy of Pediatrics, and the American Academy of Family Physicians. The standard *MMWR* footnote format has been modified for publication of this schedule.

Suggested citation: Centers for Disease Control and Prevention. Recommended immunization schedules for persons aged 0–18 years—United States, 2008. MMWR 2007;56(51&52):Q1–Q4.

References

1. CDC. Recommended childhood and adolescent immunization schedule—United States. MMWR 2007;55(51&52):Q1–Q4.
2. CDC. Revised recommendations of the Advisory Committee on Immunization Practices (ACIP) for the prevention of pneumococcal disease. Atlanta, GA: US Department of Health and Human Services, CDC; 2007. Available at http://www.cdc.gov/vaccines/recs/acip/downloads/min_oct07.pdf
3. CDC. Expansion of use of live attenuated influenza vaccine (FluMist®) to children aged 2–4 years and other FluMist changes for the 2007–08 influenza season. MMWR 2007;56:1217–9.
4. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2007;56(No. RR-6).
5. CDC. Recommendation from the Advisory Committee on Immunization Practices (ACIP) for use of quadrivalent meningococcal conjugate vaccine (MCV4) in children aged 2–10 years at increased risk for invasive meningococcal disease. MMWR 2007;56:1265–6.
6. CDC. Revised recommendations of the Advisory Committee on Immunization Practices (ACIP) to vaccinate all persons aged 11–18 years with meningococcal conjugate vaccine. MMWR 2007;56:794–5.
7. American Academy of Pediatrics. Active and passive immunization. In: Pickering LK, ed. 2006 red book: report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006.

FIGURE 1. Recommended immunization schedule for persons aged 0–6 years — United States, 2008 (for those who fall behind or start late, see the catch-up schedule [Table])



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 0–6 years. Additional information is available at http://www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for **high-risk conditions**: http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

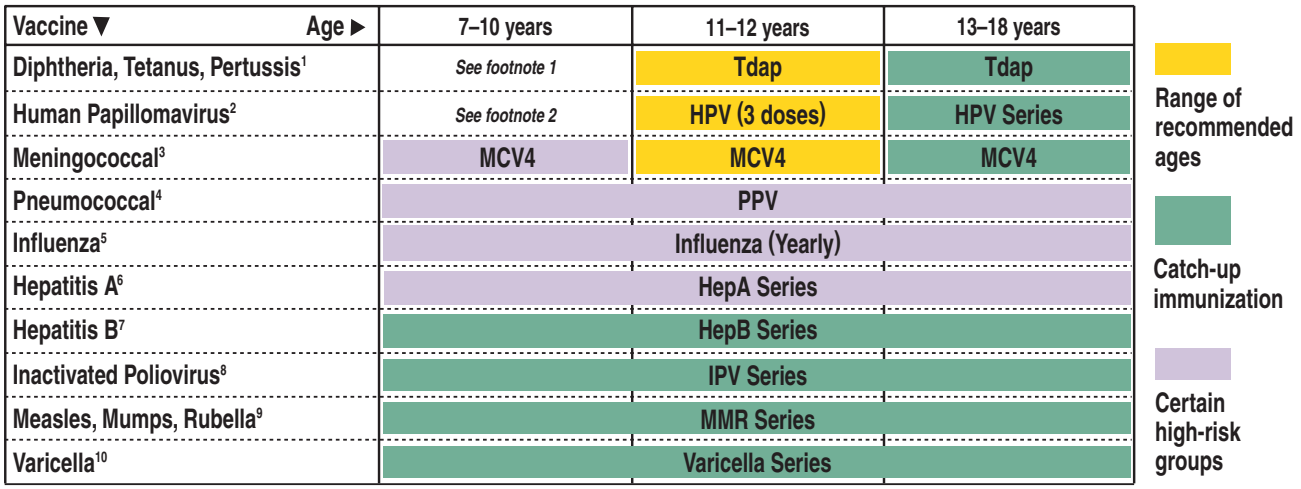
1. **Hepatitis B vaccine (HepB).** *(Minimum age: birth)*
   At birth:
   - Administer monovalent HepB to all newborns before hospital discharge.
   - If mother is hepatitis surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
   - If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine the HBsAg status as soon as possible and if HBsAg-positive, administer HBIG (no later than age 1 week).
   - If mother is HBsAg-negative, the birth dose should only be delayed, in rare cases, with health-care–provider's order and a copy of the mother's negative HBsAg laboratory report documented in the infant's medical record.

   After the birth dose:
   - The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered no earlier than age 24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of at least 3 doses of a licensed HepB series, at age 9–18 months (generally at the next well-child visit).

   4-month dose:
   - It is permissible to administer 4 doses of HepB when combination vaccines are administered after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.
2. **Rotavirus vaccine (Rota).** *(Minimum age: 6 weeks)*
   - Administer the first dose at age 6–12 weeks.
   - Do not start the series later than age 12 weeks.
   - Administer the final dose in the series by age 32 weeks. Do not administer a dose later than age 32 weeks.
   - Data on safety and efficacy outside of these age ranges are insufficient.
3. **Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** *(Minimum age: 6 weeks)*
   - The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
   - Administer the final dose in the series at age 4–6 years.
4. ***Haemophilus influenzae* type b conjugate vaccine (Hib).** *(Minimum age: 6 weeks)*
   - If PRP-OMP (PedvaxHIB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
   - TriHiBit® (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters after any Hib vaccine in children aged >12 months.
5. **Pneumococcal vaccine.** *(Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPV])*
   - Administer 1 dose of PCV to all healthy children aged 24–59 months having any incomplete schedule.
   - Administer PPV to children aged ≥2 years with underlying medical conditions.
6. **Influenza vaccine.** *(Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])*
   - Administer annually to children aged 6–59 months and to all eligible close contacts of children aged 0–59 months.
   - Administer annually to children aged ≥5 years with certain risk factors, to other persons (including household members) in close contact with persons in groups at higher risk, and to any child whose parents request vaccination.
   - For healthy persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2–49 years, either LAIV or TIV may be used.
   - Children receiving TIV should receive 0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years.
   - Administer 2 doses (separated by ≥4 weeks) to children aged <9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season but only received 1 dose.
7. **Measles, mumps, and rubella vaccine (MMR).** *(Minimum age: 12 months)*
   - Administer the second dose of MMR at age 4–6 years. MMR may be administered before age 4–6 years, provided ≥4 weeks have elapsed since the first dose.
8. **Varicella vaccine.** *(Minimum age: 12 months)*
   - Administer the second dose of varicella vaccine at age 4–6 years; may be administered ≥3 months after first dose.
   - Do not repeat second dose if administered ≥28 days after first dose.
9. **Hepatitis A vaccine (HepA).** *(Minimum age: 12 months)*
   - Administer to all children aged 1 year (i.e., aged 12–23 months). Administer the 2 doses in the series at least 6 months apart.
   - Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
   - HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.
10. **Meningococcal vaccine.** *(Minimum age: 2 years for meningococcal conjugate vaccine [MCV4] and for meningococcal polysaccharide vaccine [MPSV4])*
    - Administer MCV4 to children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. MPSV4 also is acceptable.
    - Administer MCV4 to persons who received MPSV4 ≥3 years previously and remain at increased risk for meningococcal disease.

The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/nip/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

FIGURE 2. Recommended immunization schedule for persons aged 7–18 years — United States, 2008 (for those who fall behind or start late, see the schedule below and the catch-up schedule [Table])



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 7–18 years. Additional information is available at http://www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for **high-risk conditions**: http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

1. **Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).** *(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL™)*
   - Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids vaccine (Td) booster dose.
   - Adolescents aged 13–18 years who missed the 11–12 year Tdap dose or received Td only are encouraged to receive 1 dose of Tdap 5 years after the last Td/DTaP dose.
2. **Human papillomavirus vaccine (HPV).** *(Minimum age: 9 years)*
   - Administer the first dose of the HPV vaccine series to females at age 11–12 years.
   - Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
   - Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.
3. **Meningococcal vaccine.**
   - Administer meningococcal conjugate vaccine (MCV4) at age 11–12 years and at age 13–18 years if not previously vaccinated. Meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative.
   - Administer MCV4 to previously unvaccinated college freshmen living in dormitories.
   - MCV4 is recommended for children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other groups at high risk.
   - Persons who received MPSV4 ≥3 years previously and remain at increased risk for meningococcal disease should be vaccinated with MCV4.
4. **Pneumococcal polysaccharide vaccine (PPV).**
   - Administer to certain groups at high risk.
5. **Influenza vaccine.**
   - Administer annually to all close contacts of children aged 0–59 months.
   - Administer annually to person with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at higher risk.
   - Administer 2 doses (separated by ≥4 weeks) to children aged <9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season but only received 1 dose.
   - For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2–49 years, either LAIV or TIV may be used.
6. **Hepatitis A vaccine (HepA).**
   - Administer 2 doses in the series at least 6 months apart.
   - HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.
7. **Hepatitis B vaccine (HepB).**
   - Administer the 3-dose series to those who were not previously vaccinated.
   - A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.
8. **Inactivated poliovirus vaccine (IPV).**
   - For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age ≥4 years.
   - If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.
9. **Measles, mumps, and rubella vaccine (MMR).**
   - If not previously vaccinated, administer 2 doses of MMR during any visit, with ≥4 weeks between the doses.
10. **Varicella vaccine.**
    - Administer 2 doses of varicella vaccine to persons aged <13 years at least 3 months apart. Do not repeat the second dose, if administered ≥28 days after the first dose.
    - Administer 2 doses of varicella vaccine to persons aged ≥13 years at least 4 weeks apart.

TABLE. Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are ≥1 month behind — United States, 2008

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

Vaccine	Minimum age for Dose 1	Minimum interval between doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS–6 YEARS					
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Rotavirus[2]	6 weeks	4 weeks	4 weeks		
Diphtheria, Tetanus, Pertussis[3]	6 weeks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[4]	6 weeks	4 weeks if first dose administered at age <12 months; 8 weeks (as final dose) if first dose administered at age 12–14 months; No further doses needed if first dose administered at age ≥15 months	4 weeks[4] if current age <12 months; 8 weeks (as final dose)[4] if current age ≥12 months and second dose administered at age <15 months; No further doses needed if previous dose administered at age ≥15 months	8 weeks (as final dose) This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Pneumococcal[5]	6 weeks	4 weeks if first dose administered at age <12 months; 8 weeks (as final dose) if first dose administered at age ≥12 months or current age 24–59 months; No further doses needed for healthy children if first dose administered at age ≥24 months	4 weeks if current age <12 months; 8 weeks (as final dose) if current age ≥12 months; No further doses needed for healthy children if previous dose administered at age ≥24 months	8 weeks (as final dose) This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Inactivated Poliovirus[6]	6 weeks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 months	4 weeks			
Varicella[8]	12 months	3 months			
Hepatitis A[9]	12 months	6 months			
CATCH-UP SCHEDULE FOR PERSONS AGED 7–18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	7 years[10]	4 weeks	4 weeks if first dose administered at age <12 months; 6 months if first dose administered at age ≥12 months	6 months if first dose administered at age <12 months	
Human Papillomavirus[11]	9 years	4 weeks	12 weeks		
Hepatitis A[9]	12 months	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Inactivated Poliovirus[6]	6 weeks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 months	4 weeks			
Varicella[8]	12 months	4 weeks if first dose administered at age ≥13 years; 3 months if first dose administered at age <13 years			

1. Hepatitis B vaccine (HepB).
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

2. Rotavirus vaccine (Rota).
- Do not start the series later than age 12 weeks.
- Administer the final dose in the series by age 32 weeks.
- Do not administer a dose later than age 32 weeks.
- Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).
- The fifth dose is not necessary if the fourth dose was administered at age ≥4 years.
- DTaP is not indicated for persons aged ≥7 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib).
- Vaccine is not generally recommended for children aged ≥5 years.
- If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB® or ComVax® [Merck]), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
- If first dose was administered at age 7–11 months, administer 2 doses separated by 4 weeks plus a booster at age 12–15 months.

5. Pneumococcal conjugate vaccine (PCV).
- Administer 1 dose of PCV to all healthy children aged 24–59 months having any incomplete schedule.
- For children with underlying medical conditions, administer 2 doses of PCV at least 8 weeks apart if previously received <3 doses or 1 dose of PCV if previously received 3 doses.

6. Inactivated poliovirus vaccine (IPV).
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age ≥4 years.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.
- IPV is not routinely recommended for persons aged ≥18 years.

7. Measles, mumps, and rubella vaccine (MMR).
- The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
- If not previously vaccinated, administer 2 doses of MMR during any visit with ≥4 weeks between the doses.

8. Varicella vaccine.
- The second dose of varicella vaccine is recommended routinely at age 4–6 years but may be administered earlier if desired.
- Do not repeat the second dose in persons aged <13 years if administered ≥28 days after the first dose.

9. Hepatitis A vaccine (HepA).
- HepA is recommended for certain groups of children, including in areas where vaccination programs target older children. See *MMWR* 2006;55(No. RR-7).

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).
- Tdap should be substituted for a single dose of Td in the primary catch-up series or as a booster if age appropriate; use Td for other doses.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. A booster (fourth) dose is needed if any of the previous doses were administered at age <12 months. See *MMWR* 2006;55(No. RR-3).

11. Human papillomavirus vaccine (HPV).
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

Information about reporting reactions after immunization is available online at http://www.vaers.hhs.gov or by telephone via the 24-hour national toll-free information line 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at http://www.cdc.gov/vaccines or telephone, 800-CDC-INFO (800-232-4636).

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

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Data are compiled in the National Center for Public Health Informatics, Division of Integrated Surveillance Systems and Services. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333 or to *www.mmwrq@cdc.gov*.

☆U.S. Government Printing Office: 2008-723-026/41069 Region IV ISSN: 0149-2195