



# MMWR<sup>TM</sup>

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### Adverse Health Conditions and Health Risk Behaviors Associated with Intimate Partner Violence — United States, 2005

Intimate partner violence (IPV) is defined as threatened, attempted, or completed physical or sexual violence or emotional abuse by a current or former intimate partner. IPV can be committed by a spouse, an ex-spouse, a current or former boyfriend or girlfriend, or a dating partner (1). Each year, IPV results in an estimated 1,200 deaths and 2 million injuries among women and nearly 600,000 injuries among men (1). In addition to the risk for death and injury, IPV has been associated with certain adverse health conditions and health risk behaviors (1). To gather additional information regarding the prevalence of IPV and to assess the association between IPV and selected adverse health conditions and health risk behaviors, CDC included IPV-related questions in an optional module of the 2005 Behavioral Risk Factor Surveillance System (BRFSS) survey. This report describes the results of that survey, which indicated that persons who report having experienced IPV during their lifetimes also are more likely to report current adverse health conditions and health risk behaviors. Although a causal link between IPV and adverse health conditions cannot be inferred from these results, they underscore the need for IPV assessment in health-care settings. In addition, the results indicate a need for secondary intervention strategies to address the health-related needs of IPV victims and reduce their risk for subsequent adverse health conditions and health risk behaviors.

BRFSS is an annual, state-based, random-digit-dialed telephone survey of the noninstitutionalized, U.S. civilian population aged  $\geq 18$  years. The survey solicits information on a range of health conditions and health risk behaviors. Data are weighted to account for probability of selection and to match the age-, race/ethnicity-, and sex-specific populations from annually adjusted intercensal estimates. In 2005, a total of 70,156 respondents (42,566 women

and 27,590 men) in 16 states and two territories\* completed the optional IPV module. Among these 18 states/territories, the median response rate for the 2005 BRFSS core survey, based on Council of American Survey and Research Organizations (CASRO) guidelines, was 51.6% (range: 37.8% [Massachusetts] to 72.7% [Puerto Rico]). The design and characteristics of BRFSS have been described previously.<sup>†</sup>

Logistic regression models were stratified by sex and included age, race/ethnicity, annual household income, and education level as control variables. Statistical significance ( $p < 0.05$ ) was determined using the Wald chi-square test.

The IPV module included four questions regarding physical or sexual violence by a current or former intimate partner that respondents had experienced during their lifetimes. Respondents were classified as having experienced IPV if they reported that any of the following had occurred during their lifetimes: threatened, attempted, or completed

\* States: Arizona, Hawaii, Iowa, Maine, Michigan, Missouri, Nebraska, New Mexico, Nevada, Ohio, Oklahoma, Oregon, Rhode Island, Vermont, Virginia, and Washington. Territories: Puerto Rico and the U.S. Virgin Islands.

<sup>†</sup> CDC. Behavioral Risk Factor Surveillance System 2005 summary data quality report. Available at <http://ftp.cdc.gov/pub/data/brfss/2005summarydataqualityreport.pdf>.

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physical violence or unwanted sex by a current or former intimate partner.<sup>§</sup>

Health conditions and risk behaviors were selected to cover the full range of conditions and behaviors assessed by BRFSS. These included two self-reported health conditions: 1) current use of disability equipment (e.g., a cane, wheelchair, or special bed) and 2) current activity limitations because of physical, mental, or emotional problems. Respondents also were asked whether they had ever been told by a doctor, nurse, or other health-care professional that they had 1) high blood cholesterol; 2) nongestational high blood pressure; 3) nongestational diabetes; 4) cardiovascular disease (e.g., heart attack, angina, coronary heart disease, or stroke); 5) joint disease (e.g., arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia); or 6) current asthma. In addition, selected health risk behaviors were assessed: 1) risk factors for human immunodeficiency virus (HIV) infection or sexually transmitted diseases (STDs) (i.e., if, during the preceding year, respondent had used intravenous drugs, had been treated for an STD, had given or received money or drugs in exchange for sex, or had participated in anal sex without a condom); 2) current smoking; 3) heavy or binge alcohol use (i.e., more than two drinks per day on average for men, more than one drink per day on average for women, or five or more drinks on one occasion during the preceding 30 days for men and women); and 3) having a body mass index (BMI) (weight [kg] / height [m<sup>2</sup>]) >25.<sup>¶</sup>

Lifetime IPV prevalence estimates were calculated by sex, age group, race/ethnicity, annual household income, and education level (Table 1). Lifetime IPV prevalence was significantly higher (p<0.05) among women than among men; higher among multiracial, non-Hispanic, and American Indian/Alaska Native women; and higher among lower-income respondents.

<sup>§</sup> Respondents were classified as having experienced IPV if they responded "yes" to any of the following four questions: 1) "Has an intimate partner ever threatened you with physical violence? This includes threatening to hit, slap, push, kick, or hurt you in any way." 2) "Has an intimate partner ever attempted physical violence against you? This includes times when they tried to hit, slap, push, kick, or otherwise hurt you, but they were not able to." 3) "Has an intimate partner ever hit, slapped, pushed, kicked, or hurt you in any way?" and 4) "Have you ever experienced any unwanted sex by a current or former intimate partner? Unwanted sex includes things like putting anything into your vagina [if respondent was female], anus, or mouth, or making you do these things to them after you said or showed that you didn't want to. It includes times when you were unable to consent, for example, when you were drunk or asleep, or you thought you would be hurt or punished if you refused." An intimate partner was defined to include any current or former spouse, boyfriend, girlfriend, or dating partner or any person with whom the respondent had ever been romantically or sexually intimate.

<sup>¶</sup> CDC. Behavioral Risk Factor Surveillance System 2005 survey questions. Available at <http://www.cdc.gov/brfss/questionnaires/pdf-ques/2005brfss.pdf>.

**TABLE 1. Number\* and percentage† of adults aged ≥18 years with a lifetime history of intimate partner violence victimization,§ by sex, age group, race/ethnicity, annual household income, and education level — Behavioral Risk Factor Surveillance System, United States, 2005**

Characteristic	Women			Men		
	No.	(%)	(95% CI¶)	No.	(%)	(95% CI)
<b>Overall</b>	<b>10,243</b>	<b>(23.6)</b>	<b>(22.9–24.3)</b>	<b>3,035</b>	<b>(11.5)</b>	<b>(10.8–12.2)</b>
<b>Age group (yrs)</b>						
18–24	585	(24.1)	(21.2–27.1)	306	(17.6)	(14.6–20.7)
25–34	1,941	(30.2)	(28.3–32.0)	768	(21.4)	(19.1–23.6)
35–44	2,571	(30.2)	(28.5–31.8)	984	(18.0)	(16.3–19.8)
45–54	3,054	(31.2)	(29.6–32.7)	1,089	(16.4)	(14.7–17.9)
55–64	2,129	(26.5)	(24.9–28.1)	688	(12.5)	(11.0–14.0)
≥65	1,272	(12.9)	(11.8–14.0)	340	(5.6)	(4.7–6.5)
<b>Race/Ethnicity</b>						
White, non Hispanic	8,375	(26.8)	(25.9–27.7)	3,023	(15.5)	(14.6–16.4)
Hispanic	988	(20.5)	(18.5–22.5)	360	(15.5)	(13.0–18.0)
Black, non-Hispanic	903	(29.2)	(26.2–32.2)	314	(23.3)	(19.2–27.3)
Multiracial, non-Hispanic	605	(43.1)	(37.7–48.5)	234	(26.0)	(20.5–31.4)
American Indian/Alaska Native	319	(39.0)	(32.3–45.8)	104	(18.6)	(12.3–25.0)
Asian	156	(9.7)	(6.5–12.9)	62	(8.1)**	(4.2–12.0)
Other race, non-Hispanic	80	(29.6)	(20.3–39.0)	39	(16.1)**	(7.8–24.4)
Native Hawaiian or other Pacific Islander	35	—††	—	12	—††	—
<b>Annual household income (\$)</b>						
<15,000	1,976	(35.5)	(32.9–38.1)	465	(20.7)	(17.4–24.0)
15,000–24,999	2,126	(29.2)	(27.3–31.1)	657	(20.2)	(17.6–22.8)
25,000–34,999	1,527	(30.8)	(28.6–33.8)	519	(16.3)	(14.0–18.6)
35,000–49,999	1,786	(26.7)	(24.8–28.6)	701	(16.1)	(14.2–18.0)
≥50,000	3,163	(24.2)	(22.9–25.4)	1,528	(13.9)	(12.8–15.1)
<b>Education level</b>						
Did not graduate high school	1,082	(28.1)	(25.3–31.0)	381	(15.9)	(13.3–18.6)
High school graduate	3,185	(24.5)	(23.2–25.9)	1,177	(16.3)	(14.7–17.9)
Some college	3,894	(31.7)	(30.2–33.2)	1,298	(18.5)	(16.8–20.2)
College graduate	3,378	(22.9)	(21.8–24.1)	131	(13.6)	(12.4–14.8)

\* Unweighted.

† Weighted estimate.

§ Includes threatened, attempted, or completed physical violence or unwanted sex by a current or former intimate partner.

¶ Confidence interval.

\*\* Potentially unstable estimate; relative standard error &lt;0.30.

†† Unstable estimate; relative standard error &gt;0.30.

The prevalence of each health condition and risk behavior was calculated by sex of the respondent and lifetime experience of IPV (Table 2). In addition, associations between lifetime IPV and health conditions and risk behaviors were assessed in individual logistic regression models, controlling for age, race/ethnicity, annual household income, and education level (Table 3). With the exceptions of diabetes, high blood pressure, and BMI >25, reporting of health conditions and risk behaviors was significantly higher among women who had experienced IPV during their lifetimes compared with women who had never experienced IPV. Among women, adjusted odds ratios ranged from 1.3 (95% confidence interval [CI] = 1.1–1.4) for high blood cholesterol to 3.1 (CI = 2.4–4.0) for risk factors for HIV infection or STDs (Table 3). Men who had experienced IPV during their lifetimes had a significantly higher prevalence of the following: use of disability equipment, arthritis, asthma, activity limitations, stroke, risk

factors for HIV infection or STDs, smoking, and heavy or binge drinking. Adjusted odds ratios ranged from 1.4 (CI = 1.0–2.0) for stroke to 2.6 (CI = 2.0–3.6) for risk factors for HIV infection or STDs (Table 3).

**Reported by:** MC Black, PhD, MJ Breiding, PhD, National Center for Injury Prevention and Control, CDC.

**Editorial Note:** The findings in this report are similar to those of other studies that have linked IPV with poor general health, chronic disease, disability, somatic syndromes, injury, chronic pain, STDs, functional gastrointestinal disorders, and changes in endocrine and immune functions (2–5). However, these studies often lacked the power to analyze individual outcomes and were limited to examining broader health indices. The sample size in this study is approximately four times larger than any previous health study of IPV in the United States and included a range of adverse health conditions and behaviors.

**TABLE 2. Weighted prevalence of selected health conditions and risk behaviors among adults aged  $\geq 18$  years, by sex and lifetime history of intimate partner violence (IPV)\* victimization — Behavioral Risk Factor Surveillance System, United States, 2005**

Health condition/ Risk behavior	Women				Men			
	IPV (N = 11,552)		No IPV (N = 31,014)		IPV (N = 4,175)		No IPV (N = 23,415)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Health condition</b>								
Diabetes <sup>§</sup>	6.7	(5.9–7.4)	6.4	(6.0–6.8)	6.8	(5.7–7.9)	7.6	(7.0–8.1)
Current use of disability equipment <sup>¶</sup>	8.0	(7.1–8.8)	5.8	(5.4–6.2)	7.0	(5.7–8.3)	5.5	(5.1–6.0)
Arthritis <sup>§**</sup>	36.0	(34.5–37.6)	28.6	(27.8–29.5)	24.7	(22.5–26.9)	23.6	(22.7–24.5)
Current asthma <sup>§</sup>	16.0	(14.7–17.3)	9.4	(8.8–10.0)	8.7	(7.2–10.3)	6.1	(5.5–6.6)
Current activity limitations <sup>††</sup>	30.7	(29.2–32.2)	17.0	(16.3–17.7)	24.1	(21.8–26.3)	16.7	(15.9–17.5)
Stroke <sup>§</sup>	3.2	(2.6–3.7)	2.0	(1.8–2.3)	2.3	(1.7–2.9)	2.4	(2.1–2.7)
High blood cholesterol <sup>§</sup>	36.7	(35.0–38.4)	34.0	(33.0–35.0)	37.3	(34.4–40.2)	38.7	(37.5–39.9)
High blood pressure <sup>§</sup>	22.6	(21.3–23.8)	24.0	(23.3–24.8)	24.2	(21.9–26.4)	25.8	(24.9–26.8)
Heart attack <sup>§</sup>	2.8	(2.4–3.2)	2.5	(2.3–2.8)	4.2	(3.2–5.2)	5.4	(4.9–5.8)
Heart disease <sup>§</sup>	4.2	(3.6–4.8)	3.0	(2.7–3.3)	4.3	(3.3–5.2)	5.4	(4.9–5.8)
<b>Risk behavior</b>								
Risk factors for human immunodeficiency virus (HIV) or sexually transmitted diseases (STDs) <sup>§§</sup>	7.1	(6.0–8.3)	2.5	(2.1–2.9)	8.2	(6.7–9.7)	3.2	(2.6–3.7)
Current smoking	33.8	(32.2–35.4)	14.9	(14.1–15.6)	36.5	(33.8–39.1)	19.9	(18.9–20.9)
Current heavy or binge drinking <sup>¶¶</sup>	14.5	(13.2–15.7)	8.4	(7.8–9.0)	36.3	(33.5–39.2)	22.8	(21.8–23.9)
Current body mass index <sup>***</sup> $>25$	55.5	(53.9–57.2)	51.5	(50.4–52.5)	68.8	(66.1–71.5)	68.9	(67.8–70.1)

\* Includes threatened, attempted, or completed physical violence or unwanted sex by a current or former intimate partner.

<sup>†</sup> Confidence interval.

<sup>§</sup> Told by a doctor, nurse, or other health-care professional that they had the health condition. Refers to lifetime occurrence unless indicated as current.

<sup>¶</sup> Use of disability equipment, such as a cane, wheelchair, or special bed.

<sup>\*\*</sup> Includes arthritis, rheumatoid arthritis, gout, lupus, and fibromyalgia.

<sup>††</sup> Activity limitations because of physical, mental, or emotional problems.

<sup>§§</sup> Respondents were considered to have risk factors for HIV infection or STDs if, during the preceding year, they had used intravenous drugs, had been treated for an STD, had given or received money or drugs in exchange for sex, or had participated in anal sex without a condom.

<sup>¶¶</sup> More than two drinks per day on average for men, more than one drink per day on average for women, or five or more drinks on one occasion during the preceding 30 days for men and women.

<sup>\*\*\*</sup> Weight (kg)/height (m<sup>2</sup>).

Because BRFSS is a cross-sectional survey, these findings cannot address causality. For example, whether adverse health outcomes are caused by IPV cannot be inferred. Evidence from other studies, however, suggests that one underlying mechanism that might link IPV and chronic diseases is the biologic response to long-term or ongoing stress (2–5). For example, the link between violence, stress, and somatic disorders (e.g., fibromyalgia, chronic fatigue syndrome, temporomandibular disorder, and irritable bowel syndrome) has been well established (3,5). These same stress responses also have been linked to various chronic diseases, including cardiovascular disease, asthma, diabetes, and gastrointestinal disorders (3,6). Conversely, adverse health conditions might, in certain cases, lead to increased IPV. Data suggest that women with disabilities experience more IPV than those without disabilities (7).

The findings in this report are subject to at least three other limitations. First, because BRFSS is a telephone survey of residential households, persons without landline telephones (i.e., those with no telephone or with a cellular telephone only) are not represented in the sample. Second,

because not all states/territories administered the IPV module, the data might not be representative of the entire U.S. adult population. Finally, although these findings indicated an association between IPV and adverse health conditions and health risk behaviors, not all persons who experience IPV would be expected to experience these conditions and behaviors. The number and range of questions that could be included in the IPV module were limited, and information was not collected on the severity, frequency, and context of IPV experienced by respondents. These important factors likely would influence the observed association between IPV and adverse health conditions and health risk behaviors.

Whether IPV is followed by adverse health conditions or adverse health conditions lead to IPV, both are likely to affect the overall health of affected persons, suggesting that clinicians should consider assessing exposure to IPV when patients have signs or symptoms of stress or other conditions that are consistent with IPV. Such assessment might influence the diagnosis, treatment plan, and ability of the patient to adhere to treatment. Assessing exposure to IPV

**TABLE 3. Association between lifetime history of intimate partner violence\* victimization and selected health conditions and risk behaviors among adults aged ≥18 years, by sex — Behavioral Risk Factor Surveillance System, United States, 2005**

Health condition/ Risk behavior	Women		Men	
	AOR†	(95% CI)§	AOR	(95% CI)
<b>Health condition</b>				
Diabetes¶	1.1	(0.9–1.3)	1.1	(0.9–1.4)
Current use of disability equipment**	1.5††	(1.3–1.8)	1.5††	(1.2–1.9)
Arthritis¶¶§§	1.7††	(1.6–1.9)	1.4††	(1.2–1.6)
Current asthma¶¶	1.6††	(1.4–1.8)	1.4††	(1.2–1.8)
Current activity limitations¶¶¶	2.1††	(1.9–2.3)	1.8††	(1.6–2.1)
Stroke¶¶	1.8††	(1.4–2.2)	1.4††	(1.0–2.0)
High blood cholesterol¶¶	1.3††	(1.1–1.4)	1.1	(1.0–1.3)
High blood pressure¶¶	1.1	(1.0–1.2)	1.1	(1.0–1.3)
Heart attack¶¶	1.4††	(1.1–1.7)	1.2	(0.9–1.6)
Heart disease¶¶	1.7††	(1.4–2.1)	1.2	(0.9–1.6)
<b>Risk behavior</b>				
Risk factors for human immunodeficiency virus (HIV) or sexually transmitted diseases (STDs)***	3.1††	(2.4–4.0)	2.6††	(2.0–3.6)
Current smoking	2.3††	(2.1–2.6)	1.9††	(1.7–2.2)
Current heavy or binge drinking†††	1.7††	(1.5–2.0)	1.7††	(1.5–1.9)
Current body mass index§§§ >25	1.1	(1.0–1.2)	1.0	(0.9–1.2)

\* Includes threatened, attempted, or completed physical violence or unwanted sex by a current or former intimate partner.

† Adjusted odds ratio. All models are adjusted for age, race/ethnicity, annual household income, and education level.

§ Confidence interval.

¶ Told by a doctor, nurse, or other health-care professional that they had the health condition. Refers to lifetime occurrence unless indicated as current.

\*\* Use of disability equipment, such as a cane, wheelchair, or special bed.

†† Statistically significant ( $p < 0.05$ ) by Wald chi-square test.

§§ Includes arthritis, rheumatoid arthritis, gout, lupus, and fibromyalgia.

¶¶ Activity limitations because of physical, mental, or emotional problems.

\*\*\* Respondents were considered to have risk factors for HIV infection or STDs if, during the preceding year, they had used intravenous drugs, had been treated for an STD, had given or received money or drugs in exchange for sex, or had participated in anal sex without a condom.

††† More than two drinks per day on average for men, more than one drink per day on average for women, or five or more drinks on one occasion during the preceding 30 days for men and women.

§§§ Weight (kg)/height ( $m^2$ ).

as part of good clinical practice is included in the recommendations of several medical organizations, including the American Medical Association (8) and the American College of Obstetricians and Gynecologists (9). CDC recently published *Intimate Partner Violence and Sexual Violence Victimization Assessment Instruments for Use in Healthcare Settings* (10). This compilation includes an inventory of tools that can be used by health-care providers to determine whether a patient is a victim of IPV or sexual violence and to identify those patients requiring additional services or referrals.

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## State Medicaid Coverage for Tobacco-Dependence Treatments — United States, 2006

Approximately one third of adult Medicaid recipients smoke (1). The Public Health Service (2), the Task Force on Community Preventive Services (3), and the Institute of Medicine (4) recommend that health-insurance coverage be provided for tobacco-dependence treatments. In addition, a *Healthy People 2010* national health objective calls for total health-insurance coverage for evidence-based tobacco-dependence treatments in all 51 Medicaid programs (objective 27-8b) (5). The types of tobacco-dependence treatments covered by Medicaid have been reported periodically from surveys conducted by the Center for Health and Public Policy Studies at the University of California, Berkeley (6). This report summarizes results of the 2006 survey, which determined that 39 state Medicaid programs (including the District of Columbia) covered some form of tobacco-dependence treatment (i.e., medication or counseling) for all Medicaid recipients and

one state program provided coverage for all recommended treatments. Two states that previously provided no coverage for tobacco-dependence treatment began coverage in 2006. In addition, 32 states added coverage for a new medication, varenicline (Chantix™ [Pfizer, Mission, Kansas]), one state expanded its coverage to include the nicotine lozenge, and one state expanded coverage to include individual counseling. If the 2010 objective is to be achieved, Medicaid coverage for tobacco-dependence treatment must increase substantially.

In October 2006, state Medicaid program directors were asked to identify staff members who were most knowledgeable about coverage and programs for tobacco-dependence treatment, and a survey was e-mailed to the identified staff member in each state. Follow-up was conducted through telephone, e-mail, and fax; the response rate was 100%. The survey included questions regarding coverage of tobacco-dependence treatments, the year coverage was first offered, treatments offered to pregnant women, and program requirements for patient copayments or limitations on use of treatments. The 2006 survey, for the first time, included a question regarding coverage for the nicotine lozenge and varenicline (Chantix). Medicaid programs also were asked to submit either a written copy of their coverage policies for tobacco-dependence treatments or a copy of related documentation. Of the 43 programs that reported offering coverage in 2006, a total of 41 provided some supporting documentation: 23 provided detailed documentation matching their survey responses (although seven were missing documentation regarding Chantix), 17 provided partial benefit information (e.g., documentation for pharmacotherapy but not counseling), and one provided general benefit information (i.e., mentioned coverage but did not specify which treatments were covered).

A total of 39 (76.5%) Medicaid programs reported offering coverage for at least one form of tobacco-dependence treatment for their entire Medicaid population (Table 1). In addition, four states reported offering coverage for pregnant women only. Of the 39 programs that offered any coverage to their entire Medicaid population, all covered some pharmacotherapy: Zyban® (GlaxoSmithKline, Research Triangle Park, North Carolina) or its generic equivalent (bupropion) (37 programs), nicotine patches (36), nicotine gum (34), varenicline (Chantix) (32), nicotine nasal spray (30), nicotine inhalers (30), and nicotine lozenges (28).

Seventeen states covered some form of tobacco-cessation counseling services for their entire Medicaid population (Table 1). An additional 10 states covered counseling services for pregnant women only. Of the 17 states that cov-

ered group counseling, 10 covered it for all their Medicaid enrollees, and seven covered group counseling for pregnant women only. Of the 25 states that covered individual counseling, 14 covered the entire population, and 11 covered individual counseling for pregnant women only. The three states that covered telephone counseling covered it for their entire Medicaid population.

From 2005 to 2006, two states (Alaska and Massachusetts) added coverage, one state (Delaware) expanded existing coverage to include the nicotine lozenge, and one state (Oklahoma) expanded existing coverage to include individual counseling. Varenicline (Chantix), which was approved by the Food and Drug Administration (FDA) as a tobacco-dependence treatment in 2006, was added as a covered benefit in 32 states. No state added coverage for telephone counseling in 2006.

In three states (California, New York, and Rhode Island), tobacco-dependence treatments were covered for enrollees in Medicaid managed-care organizations but not for those in fee-for-service Medicaid programs. For example, in Rhode Island, a legislative mandate for coverage of tobacco-dependence treatment in managed-care organizations resulted in coverage for all forms of nicotine-replacement therapy for enrollees in Medicaid managed-care organizations, whereas fee-for-service enrollees were covered for counseling services only.\*

Many Medicaid programs had limitations on coverage of tobacco-dependence treatment, including copayments, requirements for prior authorization to obtain coverage, limitations on treatment duration, requirements that patients try one form of therapy before beginning another (i.e., stepped-care therapy), and provision of coverage for one type of tobacco-dependence treatment at a time. Requiring copayments for tobacco-dependence treatments was the most common limitation among Medicaid programs. Among the 43 programs that covered any tobacco-dependence treatments (either for all recipients or for pregnant women), 72% required copayments (Table 2); 14 required copayments for all covered tobacco-dependence treatments (medications and counseling), and 17 required copayments for specific tobacco-dependence treatments, including 11 states that required copayments for all types of pharmacotherapy but none for counseling, three states that required copayments for brand-name tobacco-dependence drugs but not for generic drugs, and three states that required copayments for certain, but not all, medications. Among the 40 programs covering any generic drugs

\* Additional information available at <http://www.rilin.state.ri.us/publiclaws/law06/law06262.htm>.

**TABLE 1. State Medicaid program coverage for tobacco-dependence treatments,\* by type of coverage and year coverage began — United States, 2006†**

State/Area	Year any coverage began	Medication coverage							Counseling coverage		
		Gum	Patch	Nasal spray	Inhaler	Lozenge <sup>§</sup>	Varenicline (Chantix™ <sup>§</sup> )	Bupropion hydrochloride <sup>¶</sup> (Zyban®)	Group	Individual	Telephone (quitline)
Alaska	2006	Yes**	Yes**	Yes**	No	Yes**	Yes**	Yes**	No	Yes**	No
Arizona	1997 (P) <sup>††</sup>	No	No	No	No	No	No	No <sup>§§</sup>	No	Yes (P)	No
Arkansas	1999	Yes	Yes	No	No	No	No	Yes	No	Yes	No
California	1996	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes <sup>¶¶</sup>	No <sup>§§</sup>	No
Colorado	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes (P)	Yes (P)	No
Delaware	1996	Yes	Yes	Yes	Yes	Yes**	Yes**	Yes	No	No	No
District of Columbia	1996	Yes	Yes	Yes	Yes <sup>§§</sup>	Yes	Yes**	Yes	No	No	No
Florida	1998 <sup>§§</sup>	Yes	Yes	No	No	No	Yes**	Yes	No <sup>§§</sup>	No <sup>§§</sup>	No
Hawaii	1999	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	No	No	No
Illinois	2000	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	No	No
Indiana	1999	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes	No
Iowa	Unknown (P) <sup>†††</sup>	No	No	No	No	No	No	No	No	Yes (P)	No
Kansas	1999	No	Yes	No	No	No	Yes**	Yes	No	No	No
Kentucky	2000 (P) <sup>§§</sup>	No	No	No	No	No	No	No	Yes (P)	Yes (P)	No
Louisiana	1990	Yes	Yes	Yes	Yes	No	Yes**	Yes	No	No	No
Maine	1996	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No
Maryland	1996	No	No	Yes	Yes	No	Yes**	Yes	No	Yes (P)	No
Massachusetts	2006	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	No
Michigan	1997	Yes	Yes	No	No	Yes	Yes**	Yes	No	No	No
Minnesota	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes	No
Mississippi	2001	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes (P)	Yes (P)	No
Montana	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	No	No
Nevada	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	No	No
New Hampshire	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes (P)	Yes (P)	No
New Jersey	1996	No	No	No	No	No	Yes**	Yes	No	No	No
New Mexico	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes	No
New York	1999	Yes	Yes	Yes	Yes	No	Yes**	Yes	Yes <sup>¶¶</sup>	Yes (P) <sup>§§</sup>	No
North Carolina	1996	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	No	No
North Dakota	1996	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No
Ohio	1998	Yes	Yes	No	Yes	Yes	Yes**	Yes	No	No	No
Oklahoma	1999	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	Yes**	No
Oregon	1998	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes	Yes
Pennsylvania	2002	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes	No
Rhode Island	1994	Yes <sup>¶¶</sup>	Yes <sup>¶¶</sup>	Yes <sup>¶¶</sup>	Yes <sup>¶¶</sup>	Yes <sup>¶¶</sup>	No	No	Yes (P) <sup>§§§</sup>	Yes (P) <sup>§§§</sup>	No
South Carolina	1995	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes (P) <sup>§§§</sup>	Yes (P) <sup>§§§</sup>	No
South Dakota	2001	No	No	No	No	No	Yes**	Yes	No	No	No
Texas	1996	Yes	Yes	Yes	Yes	No	Yes**	Yes	No	No	No
Utah	2001	Yes	Yes	Yes (P)	Yes (P)	Yes	Yes**	Yes	Yes (P)	Yes (P)	Yes
Vermont	1999	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	No	No	No
Virginia	1996	Yes <sup>§§</sup>	Yes <sup>§§</sup>	Yes	Yes	Yes	Yes**	Yes	Yes (P)	No <sup>§§</sup>	No
Washington	2002 (P)	No	No	No	No	No	No	Yes (P)	No	Yes (P)	No
West Virginia	2000	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Wisconsin	1996	No	Yes <sup>§§</sup>	Yes	Yes	No	Yes**	Yes	No <sup>§§</sup>	Yes	No
<b>All Medicaid</b>	<b>39 states<sup>§§</sup></b>	<b>34</b>	<b>36</b>	<b>30</b>	<b>30</b>	<b>28</b>	<b>32</b>	<b>37</b>	<b>10</b>	<b>14</b>	<b>3</b>
<b>Pregnancy only</b>	<b>4 states</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>7</b>	<b>11</b>	<b>0</b>
<b>Total</b>	<b>43 states</b>	<b>34</b>	<b>36</b>	<b>31</b>	<b>31</b>	<b>28</b>	<b>32</b>	<b>38</b>	<b>17</b>	<b>25</b>	<b>3</b>
<b>Added in 2006</b>	<b>2 states</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>32</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>0</b>

\* Based on response to the question, "Does your state Medicaid program cover any of the following tobacco-dependence treatments?" Each state also was asked to provide documentation of coverage.

† N = 43. In 2006, five states with Medicaid programs (Alabama, Connecticut, Idaho, Missouri, and Tennessee) covered none of the tobacco-dependence treatments recommended in the 2000 Public Health Service *Clinical Practice Guideline*. Three states (Georgia, Nebraska, and Wyoming) covered bupropion without prior authorization; therefore, it could be used for smoking cessation, although this was not the intention of the coverage policy.

§ Coverage for the nicotine lozenge and for varenicline (Chantix™) was first assessed in the 2006 survey.

¶ Covered specifically for smoking cessation. Maine covered bupropion, but not specifically for smoking cessation.

\*\* Treatment added in 2006.

†† P = Medicaid coverage exclusively for pregnant women.

§§ Response differs from previous year's survey because of a previous reporting error. In most cases, this resulted from the state reporting on managed-care organization voluntary coverage of tobacco-dependence treatments and not Medicaid coverage policies.

¶¶ Fee-for-service Medicaid did not cover, but Medicaid managed-care organizations were required to cover.

\*\*\* Covered only after the gum or patch was used in conjunction with quitline support for 2 weeks.

††† State did not have any documentation or knowledge regarding the year coverage began.

§§§ Counseling indicated was not specific to tobacco-cessation counseling.

TABLE 2. State Medicaid program limitations in coverage for tobacco-dependence treatments — United States, 2006

State/Area	Required copayments	Required prior authorization for pharmacotherapy	Required limits on duration for pharmacotherapy	Required stepped-care therapy* for pharmacotherapy	Required counseling for pharmacotherapy coverage	Covered one tobacco-dependence treatment at a time
Alaska	Yes	Yes <sup>†</sup>	Yes <sup>†</sup>	Yes	Yes	Yes
Arizona	Yes	NA	NA	NA	NA	NA
Arkansas	No	Yes	Yes	No	Yes	No
California	No	Yes <sup>†</sup>	Yes	No	Yes	No
Colorado	Yes <sup>§</sup>	Yes	Yes	No	Yes	Yes
Delaware	Yes	Yes <sup>†</sup>	Yes <sup>†</sup>	Yes	Yes	No
District of Columbia	Yes	No	No	No	Data missing	Data missing
Florida	No	Yes <sup>†</sup>	Yes <sup>†</sup>	No	No	No
Hawaii	No	Yes	Yes	Yes	No	Yes
Illinois	Yes <sup>†</sup>	Yes <sup>†</sup>	No	Yes	No	No
Indiana	Yes <sup>§</sup>	No	Yes	No	Yes	No
Iowa	No	NA	NA	NA	NA	NA
Kansas	Yes	No	Yes	No	No	Yes
Kentucky	No	NA	NA	NA	NA	NA
Louisiana	Yes	Yes <sup>†</sup>	Yes <sup>†</sup>	No	Yes	No
Maine	Yes	Yes <sup>†</sup>	Yes	Yes	No	Yes
Maryland	Yes <sup>§</sup>	No	No	No	No	No
Massachusetts	Yes <sup>§</sup>	Yes <sup>†</sup>	Yes	No	No	No
Michigan	Yes	No	Yes	No	No	No
Minnesota	Yes <sup>§</sup>	Yes <sup>†</sup>	No	No	No	No
Mississippi	Yes	No	No	No	No	No
Montana	Yes	Yes	Yes	No	No	No
Nevada	No	No	Yes <sup>†</sup>	No	No	No
New Hampshire	Yes <sup>§</sup>	No	No	No	No	No
New Jersey	No	No	No	No	No	Data missing
New Mexico	No	No	No	No	No	No
New York	Yes <sup>†</sup>	No	Yes	No	No	No
North Carolina	Yes	No	No	No	No	No
North Dakota	Yes <sup>¶</sup>	No	Yes	No	No	No
Ohio	Yes <sup>¶</sup>	No	No	No	No	No
Oklahoma	Yes <sup>§</sup>	Yes <sup>**</sup>	Yes	No	Yes <sup>**</sup>	Yes
Oregon	Yes	No	No	No	No	No
Pennsylvania	Yes <sup>§</sup>	No	No	No	No	No
Rhode Island <sup>††</sup>	No	No	No	No	Yes	No
South Carolina	Yes <sup>§</sup>	Yes <sup>†</sup>	Yes	Yes	No	Yes
South Dakota	Yes <sup>¶</sup>	No	No	No	No	No
Texas	No	Yes <sup>†</sup>	No	No	No	No
Utah	Yes <sup>†</sup>	No	Yes <sup>†</sup>	No	No	Yes
Vermont	Yes	Yes <sup>†</sup>	Yes <sup>†</sup>	No	No	No
Virginia	Yes <sup>§</sup>	No	No	No	No	No
Washington	No	Yes	Data missing	No	Yes	NA
West Virginia	Yes <sup>§</sup>	Yes <sup>†</sup>	Yes	Yes	Yes	Yes
Wisconsin	Yes	Yes <sup>†</sup>	No	No	No	No
<b>Total (N = 43)<sup>§§</sup></b>	<b>31</b>	<b>20</b>	<b>22</b>	<b>7</b>	<b>11</b>	<b>9</b>

\* Patients required to try one form of therapy before beginning another.

<sup>†</sup> Required for certain covered tobacco-dependence treatments but not others.

<sup>§</sup> Required for pharmacotherapy but not counseling.

<sup>¶</sup> Required for brand-name drugs but not generic.

<sup>\*\*</sup> Required for coverage exceeding 90 days.

<sup>††</sup> Pharmacotherapy in Rhode Island was covered by managed-care organizations only.

<sup>§§</sup> Arizona, Iowa, and Kentucky offered coverage for counseling only (i.e., not for pharmacotherapy); only the copayment question applies to these three states.



for tobacco-dependence treatment, 26 (65%) required copayments for generic drugs (median: \$2 per prescription; range: \$1–\$5). Of the 40 programs covering any brand-name drugs for tobacco-dependence treatment, 30 (75%) required copayments (median: \$3; range: \$1–\$15). Of the 27 programs covering counseling, five (19%) required copayments (median: \$2; range: \$1–\$3) for these services.

Prior authorization for tobacco-dependence treatments was required by 20 states, with six states requiring prior authorization for all pharmacologic tobacco-dependence treatments and 14 states requiring prior authorization for selected treatments (Table 2). Twenty-two Medicaid programs had limitations on the duration of treatment for medications (median: 12 weeks). Twenty-one had limitations on the number of courses of pharmacologic treatment per year (median: one course); four programs (Colorado, Louisiana, Montana, and North Dakota) applied these limits to a lifetime benefit. Seven state Medicaid programs used stepped-care therapy, which requires use of a specific tobacco-dependence treatment before any other treatments are covered. Eleven states required enrollees to participate in counseling services to be eligible for pharmacotherapy coverage, even though two of these programs did not cover counseling. Nine states reported that Medicaid paid for one tobacco-dependence medication at a time.

**Reported by:** HA Halpin, PhD, SB McMenamin, PhD, CA Cella, MPH, NM Bellows, PhD, Center for Health and Public Policy Studies, School of Public Health, Univ of California, Berkeley. CG Husten, MD, Office on Smoking and Health, CDC.

**Editorial Note:** Ten percent of U.S. smokers have a tobacco-related disease (7). Each year, tobacco use in the United States results in \$193 billion in health-care costs and lost productivity (8), including an estimated 14% of Medicaid costs (9). Approximately 35% of adult Medicaid recipients were current smokers in 2006 (1). Effective tobacco-dependence treatments include FDA-approved pharmacotherapy and individual, group, and telephone counseling (2). Evidence indicates that tobacco-dependence treatment is highly cost-effective, even cost-saving, in certain populations (10). Nonetheless, certain states might be reluctant to add a new Medicaid benefit when facing state Medicaid budget cuts. In 2006, eight states provided no Medicaid coverage for tobacco-dependence treatments, only seven states covered all FDA-approved medications and at least one form of counseling for all enrollees, and only one state (Oregon) covered all treatments recommended by the *Clinical Practice Guideline* (2).

In 2006, measures that limited use of tobacco-dependence treatments among Medicaid beneficiaries were common, including measures that were inconsistent with

the guideline (i.e., copayments, stepped-care approaches, requirements for enrollment in counseling to obtain medication, limitations on number of treatment courses, and not allowing combined treatments) (2,3). Only New Mexico had medication-coverage policies for the entire Medicaid population consistent with current guideline recommendations to reduce barriers to tobacco-dependence treatment.

The findings in this report are subject to at least two limitations. First, although all but two states provided some supporting documentation, only 37% provided complete documentation of all covered treatments. Lack of confirmatory documentation for any self-reported data increases the likelihood of reporting errors. Second, certain percentages of Medicaid coverage in this report might differ from those in previous survey years because of previous reporting errors, not because coverage levels changed. In most cases, this resulted from particular states reporting data on managed-care organization voluntary coverage of tobacco-dependence treatments and not on Medicaid coverage policies.

Community and policy interventions that increase tobacco-use cessation include increasing the price of tobacco products, sustained media campaigns that encourage cessation and provide information about available treatments, comprehensive smoke-free policies in workplaces and public places, and state-funded tobacco-cessation quitlines (3). Although free, proactive counseling services might be available to Medicaid enrollees through state quitlines, and certain quitlines provide pharmacotherapy to Medicaid enrollees, many state quitlines do not have the capacity to provide comprehensive services (8). Thus, Medicaid partnerships with the state quitlines and coverage for telephone counseling and medications can help ensure that Medicaid recipients receive the services that will maximize their chances of quitting successfully.

Recently, the Institute of Medicine (IOM) called for eliminating all tobacco use in the United States (4). In addition to recommending regulation of tobacco products and full funding of comprehensive tobacco prevention and control programs at the CDC-recommended level, IOM specifically called for all insurance, managed-care, and employee benefit plans, including Medicaid, to cover reimbursement for effective smoking-cessation programs. Fully covering all recommended tobacco-dependence treatments, eliminating restrictions and barriers to using treatments, promoting treatment use, and educating Medicaid recipients and providers about coverage are all critical to reducing tobacco use.

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## Investigation of Progressive Inflammatory Neuropathy Among Swine Slaughterhouse Workers — Minnesota, 2007–2008

*On January 31, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).*

On October 29, 2007, the Minnesota Department of Health (MDH) was notified by a tertiary-care provider of unexplained neurologic illnesses among workers in a swine slaughterhouse (plant A) in southeast Minnesota. As a result, MDH initiated a detailed investigation at plant A to characterize the outbreak. This report describes the ongoing investigation and outbreak-control measures undertaken by state public health officials and CDC.

Plant A, located in southeastern Minnesota, employs approximately 1,200 workers and processes 18,000 pigs per day. After being notified of the illnesses, MDH investigators initiated active case finding, interviewed workers at plant A, and reviewed the plant's occupational health and employment records. As of January 28, 2008, a total of 12 workers at plant A had been identified with confirmed (eight

workers), probable (two), or possible (two) progressive inflammatory neuropathy (PIN) (Box). Illness onset ranged from November 2006 through November 2007. Median age of the 12 patients was 31 years (range: 21–51 years); six patients were female. All 12 patients reported being healthy before the onset of neurologic symptoms.

Symptoms ranged from acute paralysis to gradually progressive symmetric weakness over periods ranging from 8 to 213 days. Severity ranged from minor weakness and numbness to paralysis predominantly in the lower extremities affecting mobility. Eleven patients had evidence of axonal or demyelinating peripheral neuropathy by electrodiagnostic testing. Cerebrospinal fluid was obtained from seven patients. All seven had elevated protein levels (median: 125 mg/dL; range: 75–231 mg/dL [normal: 14–

### BOX. Working case definition for progressive inflammatory neuropathy among swine slaughterhouse workers, 2007–2008

#### Epidemiologic criterion

- Participation in or close exposure to commercial or private swine-slaughtering operations.

#### Clinical criteria

- New onset of bilateral and relatively symmetric flaccid weakness/paralysis of the limbs, with or without involvement of cranial-nerve innervated muscles.
- New onset of decreased or absent deep-tendon reflexes at least in affected limbs.

#### Diagnostic criteria

- Electrodiagnostic studies consistent with axonal or demyelinating peripheral neuropathic features in affected limbs and not attributable to an underlying chronic disease process.
- Neuroimaging consistent with radiculitis, myelitis, or encephalitis.
- Cerebrospinal fluid protein level >45 mg/dL (with or without pleocytosis).

#### Exclusion criterion

- Identification of an alternative etiology for clinical or diagnostic findings.

#### Case classification

- Confirmed case: Meets epidemiologic criterion, meets both clinical criteria, and has electrodiagnostic studies consistent with axonal or demyelinating features.
- Probable case: Meets epidemiologic criterion, at least one clinical criterion, and at least one diagnostic criterion.
- Possible case: Meets epidemiologic criterion and at least one clinical criterion.

45 mg/dL]) with no or minimal pleocytosis (median: 1 cell/dL; range: 1–73 cells/dL in a nontraumatic tap); five patients had evidence of inflammation on spinal magnetic resonance imaging (four patients in peripheral nerves or roots and one patient in the anterior spinal cord).

All 12 patients reported either working at or having regular contact with an area where swine heads were processed (known as the head table), which was located within a larger processing area in plant A known as the warm room. A case-control study was conducted among plant A workers to identify specific risk factors associated with illness. The 10 patients with confirmed or probable cases were included in the study, along with two stratified control groups: 1) a random selection of 48 healthy warm-room workers and 2) all 65 healthy head-table workers. Statistically significant ( $p < 0.05$ ) differences were calculated by chi-square test. Blood samples and throat swabs were collected from all consenting case-patients and controls. As of January 30, laboratory investigations had not identified any infectious agent from the blood and throat-swab specimens that would explain the occurrence of PIN.

Results of the case-control study indicated that case-patients (seven of 10, 70%) were significantly more likely to have worked at the head table than the warm-room controls (12 of 48, 25%) (odds ratio [OR]: 7.0; 95% confidence interval [CI] = 1.3–42.2;  $p = 0.009$ ). Case-patients also were more likely to have removed brains or remaining skeletal muscle from the pig head (a process known as backing heads) (four of 10, 40%) than controls (two of 46, 4%) (OR: 15.3; CI = 1.8–163.4;  $p = 0.006$ ). Among head-table workers, case-patients were significantly more likely to have removed brains or skeletal muscle from the head (four of seven, 57%) than head-table controls (eight of 65, 12%) (OR: 9.50; CI = 1.40–70.2;  $p = 0.01$ ). Illness was not determined to be associated with previous travel outside or within the United States; exposure to chemicals, fertilizers, or insecticides; use of medications; or receipt of previous vaccinations.

An environmental assessment of the plant was conducted on November 28, 2007. Standard personal protective equipment (PPE) used by workers at plant A included hard hats, laboratory coats (including some that were short-sleeved), boots, hearing protection, eye protection, and specialized gloves that varied with the particular task of the worker. A compressed air device was used in the plant to harvest brain tissue from pig heads at the head table. The device was placed into the skull of the pig through the foramen magnum, and the force of the air disrupted the brain material into a liquefied form that made it easier to

remove (a technique known as “blowing brains”). This technique caused generation of small droplets and splatter, possibly including aerosolized brain material, to which workers operating the device and others nearby might have been exposed. In response to the investigation, plant A voluntarily suspended harvesting of brains and instituted additional mandatory PPE on November 28, 2007, including face shields and long sleeves, for workers stationed at the head table and other workers who chose to use additional PPE.

## Results of Case-Finding Survey

A survey of the 25 federally inspected swine slaughterhouses with  $\geq 500$  employees in the United States indicated that only three plants (plant A in Minnesota and plants in Nebraska and Indiana) reported recent use of compressed air to extract pig brains. To date, no cases of PIN have been identified in association with workers at the Nebraska plant. However, several workers at the Indiana plant have been preliminarily identified with neurologic illnesses and similar histories of exposure to head-processing activities at that slaughterhouse. Further assessments of these patients, and additional measures to identify other workers with illness, are being conducted in Indiana. As a result of this investigation, all three plants have stopped using compressed air to extract brain material.

**Reported by:** *D Lachance, Mayo Clinic, Rochester; S Goyal, PhD, Univ of Minnesota, St. Paul; R Danila, PhD, A DeVries, MD, R Lynfield, MD, Minnesota Dept of Health. J Howell, DVM, J Wyatt, MPH, Indiana State Dept of Health. T Safranek, MD, Nebraska Dept of Health and Human Svcs. E Belay, MD, J McQuiston, DVM, L Schonberger, MD, J Sejvar, MD, Div of Viral and Rickettsial Diseases; S Brueck, National Institute for Occupational Safety and Health; J Adjemian, PhD, B Buss, DVM, J Gibbins, DVM, S Holzbauer, DVM, EIS officers, CDC.*

**Editorial Note:** This report summarizes an ongoing investigation of PIN, a syndrome that appears to be associated with swine slaughterhouse workers who process pig heads. Several clinical and laboratory features of this illness and the distinctive epidemiology associated with patients appear unique. Pigs slaughtered at plant A have passed inspection by the U.S. Department of Agriculture Food Safety and Inspection Service, and the investigation has not identified any foodborne risk to the general population.

The investigation in Minnesota indicates that PIN appears associated with having worked at the head table, where a compressed-air device was used to extract pig brains. In the process of blowing compressed air into the pig skull, brain material might have been splattered or even aerosolized, and workers might have been exposed through inhalation or contact with mucous membranes. One hypothesis for development of PIN is that worker exposure to

aerosolized pig neural protein might have induced an autoimmune-mediated peripheral neuropathy (1,2). Additional investigation of the characteristics and causes of PIN is under way.

Whether compressed-air devices are being used for pig-brain extraction in other slaughterhouses or processing facilities, in the United States or internationally, is unknown. Clinicians should provide CDC with information regarding swine slaughterhouse workers who might have illnesses similar to PIN, including patients with peripheral neuropathy, myelopathy, or features of both. Clinicians who identify such patients should report the cases to their state health department and contact CDC at 770-488-7100.

#### References

1. Quattrini A. Inflammatory neuropathies. *Neurol Sci* 2005;26:S6.
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## Acute Allergic-Type Reactions Among Patients Undergoing Hemodialysis — Multiple States, 2007–2008

*On February 1, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).*

CDC is investigating an outbreak of acute allergic-type reactions among patients who have undergone hemodialysis since November 19, 2007. The majority of reactions have occurred among adult hemodialysis patients, with onset within minutes of initiating a hemodialysis session. Although the cause of the outbreak is unknown and remains under investigation, the majority of reactions occurred in patients who received intravenous heparin produced by Baxter Healthcare Corporation (Deerfield, Illinois). Baxter voluntarily recalled nine lots of heparin multidose vials after learning of these adverse events among patients who received heparin during dialysis. This report describes the ongoing investigation.

CDC was first notified on January 7, 2008, by the Missouri Department of Health and Senior Services (MDHSS) of allergic-type reactions among pediatric hemodialysis patients that occurred beginning November 19, 2007, at a pediatric hospital. The reactions had been reported to MDHSS by a health-care provider at the hospital. The symptoms occurred within minutes of dialysis initiation and included facial swelling, tachycardia, hypotension, urticaria, and nausea. A total of eight episodes of acute

allergic-type reactions have been identified as occurring among four patients at the pediatric hospital during November 19, 2007–January 15, 2008. These reactions were reviewed by a clinical allergist and were determined to be consistent with anaphylactic or anaphylactoid reaction.

Upon learning of the initial cluster, CDC solicited reports of similar allergic-type reactions among hemodialysis patients nationally through nephrology e-mail lists and public health notifications. In response to these case-finding measures, CDC was contacted on January 9, 2008, by a dialysis supply company that had received reports during the previous 2-week period of approximately 50 similar reactions among adult hemodialysis patients at dialysis facilities in six states. A second supply company reported learning of similar reactions from dialysis facilities as early as December 10, 2007. CDC alerted the Food and Drug Administration (FDA) to these nationwide reports of allergic-type reactions on January 9, 2008, and has been collaborating with FDA on the investigation.

As part of the investigation, CDC has created a working case definition for these reactions. A confirmed case of acute allergic-type reaction has been defined as an episode of anaphylactic or anaphylactoid reaction characterized by angioedema (particularly swelling of lips/mouth, tongue, throat, or eyelids) or urticaria. A probable case has been defined as an episode that includes at least two of the following signs and symptoms: 1) generalized or localized sensations of warmth; 2) numbness or tingling of the extremities; 3) difficulty swallowing; 4) shortness of breath, audible wheezing, or chest tightness; 5) low blood pressure/tachycardia; or 6) nausea or vomiting.

Of the episodes reported as of January 30, CDC has identified 65 confirmed or probable cases among 53 hemodialysis patients that occurred during November 19, 2007–January 21, 2008, at 19 dialysis facilities in 12 states. CDC currently is investigating an additional 36 possible cases. Most reactions resolved after interruption of the dialysis session or treatment with diphenhydramine or steroids at the facility. Other than the eight episodes reported by MDHSS, all cases have occurred among adults.

One common factor among the cases being investigated was receipt of heparin (1,000 units/mL) from 30-mL or 10-mL vials manufactured by Baxter. Intravenous heparin is administered during most hemodialysis sessions to prevent clotting of the access and dialysis circuit. In 61 (94%) of the 65 cases, the affected patient received Baxter heparin during hemodialysis. Dialyzers from four different companies were being used when the reactions occurred. The most commonly used dialyzers, manufactured by Fresenius Medi-

cal Care (Waltham, Massachusetts), were being used in 26 (40%) of the episodes. Other exposures have not been ruled out as potential causes of the reactions, and CDC is conducting additional epidemiologic studies to examine those exposures.

On January 17, 2008, Baxter announced a voluntary recall of nine lots of heparin, based on reports the company had received (1). All nine lots were produced at a single plant; eight of the nine lots were produced during September–November 2007. Despite the January 17 recall, an additional reaction occurred on January 21, 2008, after a hemodialysis patient was administered Baxter heparin from one of the recalled lots. CDC has found indications of delays in removing the recalled lots of heparin from distribution, which might result in continued exposures. In addition, these reactions might not be limited to hemodialysis settings. One cardiac-care facility has reported seven allergic-type reactions among cardiac patients who received heparin from lots that were later recalled. CDC and state health departments are investigating these reactions.

**Reported by:** *G Turabelidze, MD, Missouri Dept of Health and Senior Svcs; A Elward, MD, Washington Univ School of Medicine; M Jones, BJC Healthcare, St. Louis, Missouri. PR Patel, MD, M Arduino, DrPH, C Gould, MD, N Shehab, PharmD, K Sunkavalli, MPH, Div of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases; S Schillie, MD, D Blossom, MD, A Kallen, MD, J Jaeger, MD, EIS officers, CDC.*

**Editorial Note:** The temporal and geographic distribution of these reactions in a discrete population of patients suggests common exposure to a health-care product with wide distribution in the United States. Previous clusters of acute allergic-type reactions among hemodialysis patients have been attributed to certain types of dialyzer membranes, ethylene oxide (used by the manufacturer as a sterilant), angiotensin-converting enzyme inhibitors, and the reuse of dialyzers (2,3). However, based on preliminary findings, these previously recognized causes of allergic-type reactions in dialysis patients are unlikely to explain this outbreak. Heparin is a biologic product rarely associated with anaphylactic reactions (4).

CDC is conducting additional case-finding activities and epidemiologic studies to define the scope of the outbreak and is exploring options for laboratory testing to further characterize these reactions. Health-care providers should 1) immediately discontinue use of and segregate the recalled lots of heparin, 2) report medication reactions to MedWatch, the online FDA reporting system for adverse medication events,\* and 3) report to their state or local

health departments any acute allergic-type reactions that have occurred since November 2007 in patients receiving hemodialysis or intravenous medication infusion. Health departments are asked to report reactions to CDC by telephone (404-639-4514 or 404-639-4273) or e-mail (dblossom@cdc.gov or ppatel@cdc.gov).

#### References

1. Baxter Healthcare Corporation. Urgent product recall. Rockville, MD: Food and Drug Administration; 2008. Available at [http://www.fda.gov/medwatch/safety/2008/heparin\\_recall\\_01-17-2008.pdf](http://www.fda.gov/medwatch/safety/2008/heparin_recall_01-17-2008.pdf).
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3. CDC. Epidemiologic notes and reports of acute allergic reactions associated with reprocessed hemodialyzers—Virginia, 1989. *MMWR* 1989;38:873–4.
4. Berkun Y, Haviv YS, Schwartz LB, Shalit M. Heparin-induced recurrent anaphylaxis. *Clin Exp Allergy* 2004;34:1916–8.

#### Notice to Readers

### **Guidance for Presentation of Economic Studies to the Advisory Committee on Immunization Practices**

The charter of the Advisory Committee on Immunization Practices (ACIP) states that committee deliberations on the appropriate use of vaccines should include consideration of population-based studies such as efficacy, cost-benefit, and risk-benefit analyses (1). As the number and cost of vaccines have increased, economic analyses have become an essential aspect of the development of policy recommendations for their use. To ensure that economic data presented to the ACIP and its working groups are of the highest scientific quality, readily understandable, and uniform in presentation, CDC economists have developed Guidance for Health Economics Studies Presented to the ACIP. This guidance, approved by ACIP on June 27, 2007, mandates formal technical review of any economic study before its presentation to the ACIP, effective as of the ACIP meeting, June 25–26, 2008.

The Guidance requires that all economic data presented to the ACIP be reviewed by anonymous peer reviewers within CDC. When a reviewer with a particular area of economic expertise is not available within CDC, external reviewers may be used. Materials to be submitted for review must include a report that provides the methods and results of the study, slides, and other presentation materials as needed. The report and other materials must be sent to the appropriate ACIP working group no later than 8 weeks before the ACIP general meeting or working group meeting at which the analysis is scheduled to be presented. Reviewers will consult with relevant CDC subject-matter

\* Available at <http://www.fda.gov/medwatch>.

experts and return comments and questions in writing to the National Center for Immunization and Respiratory Diseases lead economist (or designee) at least 4 weeks in advance of the formal presentation. Additional details are included in the guidance document, which is available at <http://www.cdc.gov/vaccines/recs/acip/economic-studies.htm>.

#### Reference

1. CDC. ACIP charter. Atlanta, GA: US Department of Health and Human Services, CDC; 2007. Available at <http://www.cdc.gov/vaccines/recs/acip/charter.htm>.

#### *Notice to Readers*

### **Sixth International Conference on Emerging Infectious Diseases**

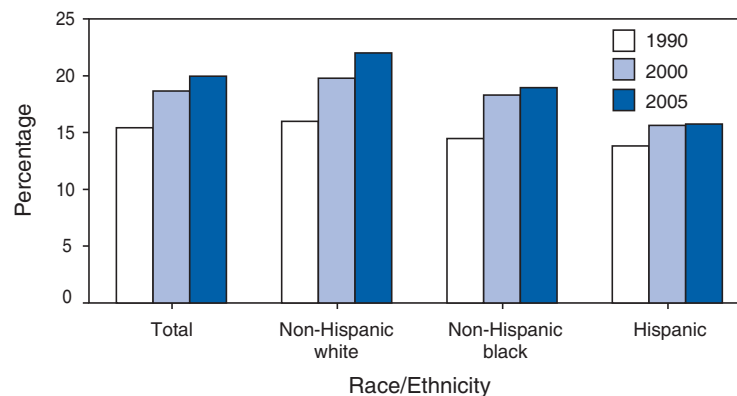
The sixth International Conference on Emerging Infectious Diseases will be held March 16–19, 2008, at the Hyatt Regency Atlanta Hotel in Atlanta, Georgia. The conference brings together public health professionals to encourage exchange of scientific and public health information on global emerging infectious diseases.

The conference will include plenary and panel sessions and oral and poster presentations. Topics will include antimicrobial resistance, bioterrorism and preparedness, foodborne and waterborne illnesses, global health, molecular diagnostics and epidemiology, nosocomial infections, respiratory and vaccine-preventable diseases, socioeconomic and political factors, vectorborne diseases, and zoonotic diseases. Additional information, including registration instructions and lists of keynote speakers, plenary sessions, and panel sessions, is available at <http://www.iceid.org>.

## QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

### Percentage of Women\* Who Gained >40 Pounds During Pregnancy, by Race/Ethnicity<sup>†</sup> of Mother — United States, 1990, 2000, and 2005<sup>§</sup>



\* Includes only mothers with a singleton delivery.

<sup>†</sup> Includes only non-Hispanic white, non-Hispanic black, and Hispanic mothers (who might be of any race).

<sup>§</sup> The total number of women who gained >40 pounds was 456,678 in 1990, 588,253 in 2000, and 656,363 in 2005.

Since 1989, data on weight gain of women during pregnancy have been collected on U.S. birth certificates. Weight gain of >40 pounds during pregnancy is not recommended for women having a singleton birth, regardless of the woman's height and prepregnancy weight. Excessive weight gain is associated with greater risk for gestational diabetes, preeclampsia, and other adverse conditions during pregnancy and complications of delivery for both mother and infant. From 1990 to 2005, the percentage of women overall who gained >40 pounds increased from 15% to 20%; the percentage who gained >40 pounds also increased among non-Hispanic white, non-Hispanic black, and Hispanic women. Non-Hispanic white women were more likely than non-Hispanic black and Hispanic women to gain >40 pounds during pregnancy in 1990, 2000, and 2005.

**SOURCES:** National Vital Statistics System. Annual natality files. Available at <http://www.cdc.gov/nchs/vitalstats.htm>.

Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2005. Natl Vital Stat Rep 2007;56(6). Available at [http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56\\_06.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_06.pdf).

**TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending February 2, 2008 (5th Week)\***

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2007	2006	2005	2004	2003	
Anthrax	—	—	—	—	1	—	—	—	
Botulism:									
foodborne	—	1	0	20	20	19	16	20	
infant	—	3	2	83	97	85	87	76	
other (wound & unspecified)	—	—	1	24	48	31	30	33	
Brucellosis	—	2	2	127	121	120	114	104	
Chancroid	—	3	1	33	33	17	30	54	
Cholera	—	—	0	7	9	8	6	2	
Cyclosporiasis§	—	2	1	98	137	543	160	75	
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§:									
<i>Ehrlichia chaffeensis</i>	—	—	—	N	N	N	N	N	
<i>Ehrlichia ewingii</i>	—	—	—	N	N	N	N	N	
<i>Anaplasma phagocytophilum</i>	—	—	—	N	N	N	N	N	
undetermined	—	—	—	N	N	N	N	N	
<i>Haemophilus influenzae</i> ,**									
invasive disease (age <5 yrs):									
serotype b	1	1	1	21	29	9	19	32	NY (1)
nonserotype b	1	9	3	165	175	135	135	117	OH (1)
unknown serotype	5	21	4	187	179	217	177	227	NYC (1), PA (1), OH (1), MD (1), GA (1)
Hansen disease§	2	5	1	64	66	87	105	95	FL (1), CA (1)
Hantavirus pulmonary syndrome§	—	—	0	32	40	26	24	26	
Hemolytic uremic syndrome, postdiarrheal§	—	3	2	252	288	221	200	178	
Hepatitis C viral, acute	7	33	15	759	766	652	720	1,102	NY (2), PA (2), MD (2), AL (1)
HIV infection, pediatric (age <13 yrs)††	—	—	3	—	—	380	436	504	
Influenza-associated pediatric mortality§,§§	—	—	1	76	43	45	—	N	
Listeriosis	8	32	9	754	884	896	753	696	NY (2), PA (1), VA (1), NC (3), CA (1)
Measles¶¶	—	—	0	35	55	66	37	56	
Meningococcal disease, invasive***:									
A, C, Y, & W-135	—	—	7	276	318	297	—	—	
serogroup B	—	—	3	135	193	156	—	—	
other serogroup	—	—	1	29	32	27	—	—	
unknown serogroup	—	—	16	578	651	765	—	—	
Mumps	8	31	8	749	6,584	314	258	231	NY (1), PA (1), FL (4), CA (1), AK (1)
Novel influenza A virus infections	—	—	—	4	N	N	N	N	
Plague	—	—	—	6	17	8	3	1	
Poliomyelitis, paralytic	—	—	—	—	—	1	—	—	
Poliovirus infection, nonparalytic§	—	—	—	—	N	N	N	N	
Psittacosis§	—	—	0	10	21	16	12	12	
Q fever§:									
acute	—	—	—	—	—	—	—	—	
chronic	—	—	—	—	—	—	—	—	
Rabies, human	—	—	0	—	3	2	7	2	
Rubella†††	—	—	0	11	11	11	10	7	
Rubella, congenital syndrome	—	—	0	—	1	1	—	1	
SARS-CoV§§§	—	—	—	—	—	—	—	8	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	1	1	3	102	125	129	132	161	NC (1)
Syphilis, congenital (age <1 yr)	—	15	8	606	349	329	353	413	
Tetanus	—	—	0	22	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 and 2008 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.

¶¶ 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 February 2, 2008 (5th Week)\***

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2007	2006	2005	2004	2003	
Toxic-shock syndrome (staphylococcal)§	—	3	2	79	101	90	95	133	
Trichinellosis	1	1	0	6	15	16	5	6	CA (1)
Tularemia	—	—	0	113	95	154	134	129	
Typhoid fever	5	20	5	333	353	324	322	356	OH (1), TX (2), CA (2)
Vancomycin-intermediate <i>Staphylococcus aureus</i> §	—	—	—	28	6	2	—	N	
Vancomycin-resistant <i>Staphylococcus aureus</i> §	—	—	—	—	1	3	1	N	
Vibriosis (noncholera <i>Vibrio</i> species infections)§	1	8	0	359	N	N	N	N	CA (1)
Yellow fever	—	—	—	—	—	—	—	—	

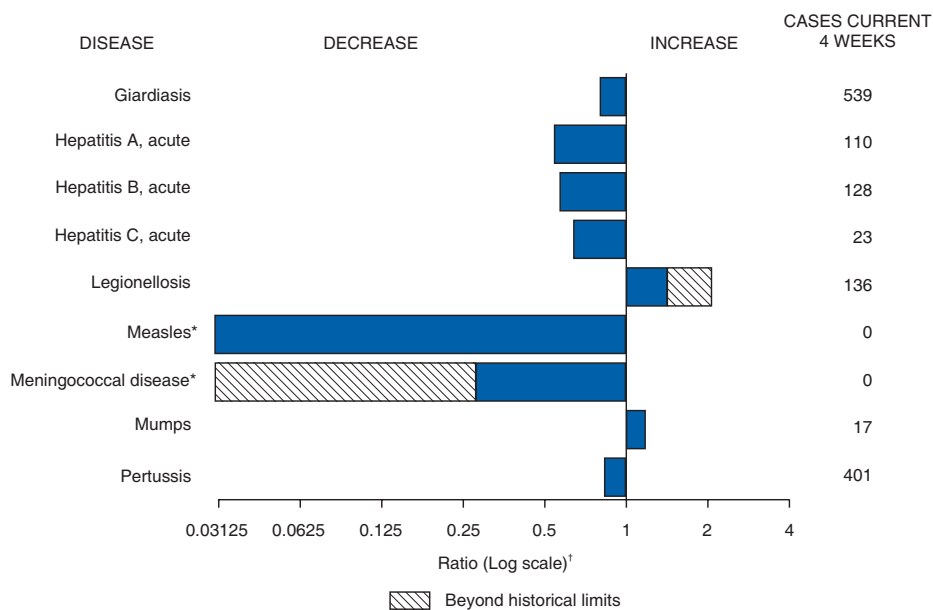
—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.

\* 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 and 2008 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 February 2, 2008, with historical data**



\* No measles or meningococcal cases were reported for the current 4-week period, yielding a ratio for week 5 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      Rosaline Dhara  
 Willie J. Anderson      Carol Worsham  
 Lence Blanton      Pearl C. Sharp





**TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending February 2, 2008, and February 3, 2007 (5th Week)\***

Reporting area	Hepatitis (viral, acute), by type <sup>†</sup>										Legionellosis				
	A					B									
	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			
<b>United States</b>	33	53	82	161	212	22	80	105	186	351	45	46	91	150	148
<b>New England</b>	2	2	6	9	2	—	1	5	—	2	1	2	14	7	6
Connecticut	1	0	3	3	—	—	0	5	—	1	—	0	5	1	—
Maine <sup>§</sup>	—	0	1	1	—	—	0	2	—	—	—	0	2	—	—
Massachusetts	—	1	4	—	1	—	0	1	—	—	—	0	2	—	5
New Hampshire	—	0	3	—	1	—	0	1	—	1	—	0	2	—	—
Rhode Island <sup>§</sup>	1	0	3	5	—	—	0	3	—	—	1	0	6	4	—
Vermont <sup>§</sup>	—	0	1	—	—	—	0	1	—	—	—	0	2	2	1
<b>Mid. Atlantic</b>	10	9	21	27	30	6	9	15	16	63	17	12	36	35	34
New Jersey	—	2	6	1	11	—	1	8	—	21	—	1	11	—	9
New York (Upstate)	2	1	5	6	1	—	1	7	2	4	2	4	15	5	3
New York City	—	3	9	6	10	—	2	6	1	16	—	2	11	1	6
Pennsylvania	8	2	5	14	8	6	3	8	13	22	15	5	21	29	16
<b>E.N. Central</b>	1	5	12	8	27	—	7	15	15	60	7	9	28	28	42
Illinois	—	2	5	—	14	—	2	6	1	10	—	1	12	—	6
Indiana	—	0	4	—	—	—	0	8	—	—	—	1	7	—	2
Michigan	—	1	5	5	8	—	2	6	—	25	—	2	10	5	17
Ohio	1	1	4	3	5	—	2	7	14	19	7	4	17	23	15
Wisconsin	—	0	3	—	—	—	0	2	—	6	—	0	1	—	2
<b>W.N. Central</b>	5	3	18	23	5	—	2	8	8	18	1	1	9	6	8
Iowa	—	1	4	5	1	—	0	2	—	5	—	0	2	1	1
Kansas	1	0	3	4	—	—	0	2	2	—	—	0	1	—	—
Minnesota	1	0	17	2	—	—	0	4	—	—	—	0	6	—	1
Missouri	1	0	2	5	2	—	1	5	4	10	—	0	3	—	4
Nebraska <sup>§</sup>	2	0	2	6	1	—	0	1	2	2	—	0	2	4	2
North Dakota	—	0	0	—	—	—	0	1	—	—	—	0	0	—	—
South Dakota	—	0	1	1	1	—	0	1	—	1	1	0	1	1	—
<b>S. Atlantic</b>	2	10	21	26	39	6	19	36	63	73	13	7	23	39	34
Delaware	—	0	1	—	—	—	0	2	—	1	—	0	2	—	—
District of Columbia	—	0	5	—	4	—	0	1	—	—	—	0	1	—	—
Florida	1	3	8	14	14	5	6	12	27	28	6	3	12	20	13
Georgia	—	1	4	3	11	1	2	6	7	15	3	1	2	6	2
Maryland <sup>§</sup>	1	1	5	7	2	—	2	6	3	13	2	1	5	8	11
North Carolina	—	0	9	—	1	—	0	16	17	—	2	1	4	3	2
South Carolina <sup>§</sup>	—	0	4	—	2	—	1	5	5	5	—	0	2	—	2
Virginia <sup>§</sup>	—	1	5	2	5	—	2	11	3	10	—	1	4	1	3
West Virginia	—	0	2	—	—	—	0	10	1	1	—	0	3	1	1
<b>E.S. Central</b>	—	2	5	3	9	2	7	14	18	30	—	2	6	5	9
Alabama <sup>§</sup>	—	0	4	1	1	2	2	6	8	11	—	0	1	—	2
Kentucky	—	0	2	2	2	—	1	7	5	4	—	1	3	3	4
Mississippi	—	0	1	—	4	—	0	3	—	8	—	0	0	—	—
Tennessee <sup>§</sup>	—	1	5	—	2	—	2	8	5	7	—	1	4	2	3
<b>W.S. Central</b>	—	5	16	3	11	2	18	44	27	32	1	2	8	6	—
Arkansas <sup>§</sup>	—	0	2	—	2	—	1	4	—	4	—	0	3	1	—
Louisiana	—	0	3	—	2	—	1	6	1	8	—	0	1	—	—
Oklahoma	—	0	8	—	—	—	1	38	—	—	—	0	2	—	—
Texas <sup>§</sup>	—	3	10	3	7	2	12	28	26	20	1	2	7	5	—
<b>Mountain</b>	2	4	15	12	24	—	3	8	4	22	1	2	6	8	9
Arizona	1	3	11	10	21	—	1	4	1	11	—	0	5	6	2
Colorado	—	0	2	—	1	—	0	3	1	2	—	0	2	—	1
Idaho <sup>§</sup>	1	0	2	2	—	—	0	1	—	1	1	0	1	1	—
Montana <sup>§</sup>	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
Nevada <sup>§</sup>	—	0	2	—	1	—	1	3	—	6	—	0	2	—	2
New Mexico <sup>§</sup>	—	0	1	—	—	—	0	2	—	2	—	0	1	—	2
Utah	—	0	2	—	—	—	0	2	2	—	—	0	3	1	1
Wyoming <sup>§</sup>	—	0	1	—	1	—	0	1	—	—	—	0	1	—	1
<b>Pacific</b>	11	12	32	50	65	6	10	22	35	51	4	3	8	16	6
Alaska	—	0	1	—	—	—	0	2	2	2	—	0	0	—	—
California	10	10	29	42	61	3	7	16	26	37	4	2	8	15	6
Hawaii	—	0	1	—	—	—	0	2	1	—	—	0	0	—	—
Oregon <sup>§</sup>	—	1	4	7	3	2	1	4	5	10	—	0	2	1	—
Washington	1	1	5	1	1	1	1	6	1	2	—	0	2	—	—
American Samoa	—	0	0	—	—	—	0	13	—	—	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	1	—	1	—	0	0	—	—
Puerto Rico	—	1	5	—	5	—	1	5	2	7	—	0	1	—	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.

<sup>†</sup> Incidence data for reporting years 2007 and 2008 are provisional.<sup>‡</sup> Data for acute hepatitis C, viral are available in Table I.<sup>§</sup> Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending February 2, 2008, and February 3, 2007 (5th 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		
<b>United States</b>	166	311	1,301	379	734	16	24	39	56	99	—	17	40	—	105
<b>New England</b>	—	41	301	3	58	—	1	4	—	6	—	0	3	—	5
Connecticut	—	11	214	—	6	—	0	1	—	—	—	0	1	—	1
Maine§	—	4	61	—	—	—	0	2	—	1	—	0	1	—	1
Massachusetts	—	0	31	—	25	—	0	3	—	5	—	0	2	—	3
New Hampshire	—	8	88	2	24	—	0	4	—	—	—	0	1	—	—
Rhode Island§	—	0	74	—	—	—	0	0	—	—	—	0	1	—	—
Vermont§	—	1	13	1	3	—	0	2	—	—	—	0	1	—	—
<b>Mid. Atlantic</b>	148	153	664	261	428	3	6	17	11	18	—	2	8	—	14
New Jersey	—	35	176	19	132	—	0	2	—	—	—	0	2	—	3
New York (Upstate)	3	54	192	15	27	1	1	7	2	2	—	1	3	—	1
New York City	—	3	25	—	12	—	4	9	5	13	—	0	4	—	3
Pennsylvania	145	50	321	227	257	2	1	4	4	3	—	1	5	—	7
<b>E.N. Central</b>	—	12	168	3	29	1	2	7	11	21	—	2	9	—	18
Illinois	—	1	15	—	2	—	0	6	1	11	—	0	3	—	6
Indiana	—	0	7	—	1	—	0	2	—	—	—	0	4	—	2
Michigan	—	0	5	1	2	—	0	2	2	4	—	0	2	—	4
Ohio	—	0	4	1	2	1	0	3	7	3	—	0	2	—	3
Wisconsin	—	10	149	1	22	—	0	2	1	3	—	0	1	—	3
<b>W.N. Central</b>	—	5	483	—	9	—	0	8	—	7	—	1	5	—	8
Iowa	—	1	11	—	2	—	0	1	—	1	—	0	3	—	1
Kansas	—	0	2	—	1	—	0	1	—	—	—	0	1	—	1
Minnesota	—	1	483	—	6	—	0	8	—	3	—	0	4	—	—
Missouri	—	0	4	—	—	—	0	1	—	1	—	0	2	—	5
Nebraska§	—	0	2	—	—	—	0	1	—	2	—	0	2	—	—
North Dakota	—	0	2	—	—	—	0	1	—	—	—	0	1	—	—
South Dakota	—	0	0	—	—	—	0	1	—	—	—	0	1	—	1
<b>S. Atlantic</b>	12	69	213	93	194	5	4	14	19	24	—	3	11	—	17
Delaware	1	12	34	32	34	—	0	1	—	1	—	0	1	—	—
District of Columbia	—	0	7	—	—	—	0	1	—	—	—	0	0	—	—
Florida	2	1	11	7	3	3	1	7	9	7	—	1	7	—	7
Georgia	—	0	3	1	—	1	1	3	4	1	—	0	3	—	3
Maryland§	9	31	130	48	134	1	1	5	6	6	—	0	2	—	3
North Carolina	—	0	8	—	—	—	0	4	—	2	—	0	4	—	—
South Carolina§	—	0	4	—	1	—	0	1	—	—	—	0	1	—	2
Virginia§	—	16	62	5	22	—	1	6	—	7	—	0	2	—	2
West Virginia	—	0	9	—	—	—	0	1	—	—	—	0	1	—	—
<b>E.S. Central</b>	—	1	5	—	2	—	1	3	1	5	—	1	3	—	10
Alabama§	—	0	3	—	—	—	0	1	1	—	—	0	2	—	2
Kentucky	—	0	2	—	—	—	0	1	—	1	—	0	2	—	—
Mississippi	—	0	1	—	—	—	0	1	—	1	—	0	2	—	4
Tennessee§	—	0	4	—	2	—	0	2	—	3	—	0	2	—	4
<b>W.S. Central</b>	—	1	6	—	4	1	1	12	2	4	—	2	7	—	7
Arkansas§	—	0	1	—	—	—	0	1	—	—	—	0	2	—	—
Louisiana	—	0	1	—	1	—	0	2	—	2	—	0	3	—	5
Oklahoma	—	0	0	—	—	1	0	2	1	—	—	0	3	—	1
Texas§	—	1	6	—	3	—	1	12	1	2	—	1	4	—	1
<b>Mountain</b>	—	1	3	1	2	—	1	6	1	3	—	1	4	—	6
Arizona	—	0	1	—	—	—	0	3	—	—	—	0	2	—	2
Colorado	—	0	1	1	—	—	0	2	1	3	—	0	2	—	—
Idaho§	—	0	2	—	—	—	0	2	—	—	—	0	2	—	1
Montana§	—	0	2	—	1	—	0	1	—	—	—	0	1	—	—
Nevada§	—	0	2	—	1	—	0	1	—	—	—	0	1	—	1
New Mexico§	—	0	1	—	—	—	0	1	—	—	—	0	1	—	1
Utah	—	0	2	—	—	—	0	3	—	—	—	0	2	—	1
Wyoming§	—	0	1	—	—	—	0	0	—	—	—	0	1	—	—
<b>Pacific</b>	6	2	9	18	8	6	3	9	11	11	—	4	12	—	20
Alaska	—	0	2	—	—	—	0	1	—	2	—	0	1	—	—
California	6	2	9	18	8	5	2	8	9	5	—	3	9	—	19
Hawaii	N	0	0	N	N	—	0	0	—	—	—	0	1	—	—
Oregon§	—	0	1	—	—	1	0	2	2	3	—	0	3	—	1
Washington	—	0	7	—	—	—	0	3	—	1	—	0	6	—	—
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	2	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	—	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, &amp; 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 February 2, 2008, and February 3, 2007 (5th 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		
<b>United States</b>	217	175	334	491	859	60	107	191	209	445	3	34	148	17	34
<b>New England</b>	—	25	45	6	164	3	10	22	18	48	—	0	1	—	—
Connecticut	—	0	5	—	8	2	4	10	9	23	—	0	0	—	—
Maine†	—	1	5	4	13	1	1	5	1	8	—	0	1	—	—
Massachusetts	—	18	33	—	131	—	0	0	—	N	—	0	1	—	—
New Hampshire	—	1	5	—	9	—	1	4	3	4	—	0	1	—	—
Rhode Island†	—	0	8	1	—	—	1	4	2	4	—	0	0	—	—
Vermont†	—	0	9	1	3	—	2	13	3	9	—	0	0	—	—
<b>Mid. Atlantic</b>	22	22	42	69	185	6	26	56	25	95	1	1	7	1	6
New Jersey	—	2	6	—	30	N	0	0	N	N	—	0	3	—	1
New York (Upstate)	8	8	25	18	92	6	9	20	25	27	—	0	1	—	—
New York City	—	2	7	—	17	—	1	5	—	9	—	0	3	—	2
Pennsylvania	14	7	22	51	46	—	16	44	—	59	1	0	3	1	3
<b>E.N. Central</b>	176	25	79	255	156	—	4	48	—	—	—	1	4	—	2
Illinois	—	2	9	5	43	—	1	15	—	—	—	0	3	—	—
Indiana	—	0	9	1	—	—	0	1	—	—	—	0	2	—	—
Michigan	—	4	16	3	34	—	1	27	—	—	—	0	1	—	1
Ohio	176	12	54	246	55	—	1	11	—	—	—	0	2	—	1
Wisconsin	—	0	24	—	24	N	0	0	N	N	—	0	0	—	—
<b>W.N. Central</b>	7	12	65	53	67	5	4	13	7	11	—	5	37	6	4
Iowa	—	2	8	1	26	—	0	3	1	1	—	0	4	—	—
Kansas	—	2	8	—	26	—	2	7	—	7	—	0	2	—	2
Minnesota	—	0	53	—	—	4	0	6	4	2	—	0	2	—	—
Missouri	7	2	13	45	4	—	0	3	—	1	—	5	29	6	2
Nebraska†	—	1	12	6	3	—	0	0	—	—	—	0	2	—	—
North Dakota	—	0	4	—	—	1	0	5	2	—	—	0	0	—	—
South Dakota	—	0	7	1	8	—	0	2	—	—	—	0	1	—	—
<b>S. Atlantic</b>	5	17	48	43	76	44	40	156	140	261	2	15	112	8	12
Delaware	—	0	2	—	—	—	0	0	—	—	—	0	2	—	2
District of Columbia	—	0	1	—	1	—	0	0	—	—	—	0	1	—	—
Florida	3	3	17	9	24	—	0	124	8	124	—	0	3	—	—
Georgia	—	0	3	1	8	31	5	12	42	17	1	0	6	3	3
Maryland†	2	2	6	8	19	—	8	18	8	35	1	1	4	4	4
North Carolina	—	4	34	18	—	8	9	19	33	28	—	5	96	1	—
South Carolina†	—	1	11	3	10	—	0	11	—	7	—	0	7	—	1
Virginia†	—	2	11	4	14	5	13	31	49	44	—	2	11	—	2
West Virginia	—	0	12	—	—	—	0	11	—	6	—	0	3	—	—
<b>E.S. Central</b>	1	6	35	19	37	1	3	6	2	10	—	5	16	2	9
Alabama†	—	1	6	4	12	—	0	0	—	—	—	1	10	1	5
Kentucky	—	0	4	2	1	1	0	3	2	4	—	0	2	—	—
Mississippi	—	3	32	10	11	—	0	1	—	—	—	0	2	—	1
Tennessee†	1	1	5	3	13	—	2	6	—	6	—	2	10	1	3
<b>W.S. Central</b>	—	20	48	11	15	1	1	23	4	4	—	1	30	—	1
Arkansas†	—	1	17	1	—	1	1	3	4	—	—	0	15	—	—
Louisiana	—	0	2	—	1	—	0	0	—	—	—	0	1	—	—
Oklahoma	—	0	26	—	—	—	0	22	—	4	—	0	20	—	—
Texas†	—	16	33	10	14	—	0	0	—	—	—	1	5	—	1
<b>Mountain</b>	2	21	40	19	113	—	3	14	6	4	—	0	4	—	—
Arizona	1	3	13	3	32	—	2	12	5	4	—	0	1	—	—
Colorado	—	6	14	5	40	—	0	0	—	—	—	0	2	—	—
Idaho†	1	0	4	1	7	—	0	0	—	—	—	0	1	—	—
Montana†	—	1	7	4	5	—	0	3	—	—	—	0	1	—	—
Nevada†	—	0	6	—	4	—	0	2	—	—	—	0	0	—	—
New Mexico†	—	1	7	—	5	—	0	2	—	—	—	0	1	—	—
Utah	—	6	27	6	12	—	0	2	—	—	—	0	0	—	—
Wyoming†	—	0	2	—	8	—	0	4	1	—	—	0	2	—	—
<b>Pacific</b>	4	14	124	16	46	—	4	10	7	12	—	0	2	—	—
Alaska	1	0	6	5	8	—	0	6	4	8	N	0	0	N	N
California	—	6	24	—	26	—	3	8	3	4	—	0	2	—	—
Hawaii	—	0	1	—	2	N	0	0	N	N	N	0	0	N	N
Oregon†	—	1	14	5	8	—	0	3	—	—	—	0	1	—	—
Washington	3	3	106	6	2	—	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	1	6	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 February 2, 2008, and February 3, 2007 (5th Week)\*

Table with 16 columns: Reporting area, Current week, Previous 52 weeks (Med, Max), Cum 2008, Cum 2007 for Salmonellosis; Current week, Previous 52 weeks (Med, Max), Cum 2008, Cum 2007 for Shiga toxin-producing E. coli (STEC)†; Current week, Previous 52 weeks (Med, Max), Cum 2008, Cum 2007 for Shigellosis. Rows include United States, New England, Mid. Atlantic, E.N. Central, W.N. Central, S. Atlantic, E.S. Central, W.S. Central, Mountain, Pacific, and various states/territories.

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 February 2, 2008, and February 3, 2007 (5th Week)\*

Reporting area	Streptococcal disease, invasive, group A					<i>Streptococcus pneumoniae</i> , 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		
<b>United States</b>	49	81	168	340	461	10	35	102	106	149
<b>New England</b>	—	5	28	3	34	—	1	7	2	23
Connecticut	—	0	22	—	2	—	0	2	—	2
Maine§	—	0	3	1	3	—	0	1	—	—
Massachusetts	—	2	12	—	21	—	1	4	—	16
New Hampshire	—	0	4	2	4	—	0	2	2	2
Rhode Island§	—	0	1	—	—	—	0	1	—	2
Vermont§	—	0	1	—	4	—	0	1	—	1
<b>Mid. Atlantic</b>	14	16	40	73	84	—	5	38	11	25
New Jersey	—	2	12	3	13	—	1	5	1	7
New York (Upstate)	8	5	20	34	15	—	2	13	10	12
New York City	—	4	13	5	25	—	1	35	—	6
Pennsylvania	6	5	11	31	31	N	0	0	N	N
<b>E.N. Central</b>	5	14	34	56	117	4	4	17	19	30
Illinois	—	4	13	4	42	—	1	6	—	4
Indiana	—	2	10	9	8	—	0	11	2	2
Michigan	—	3	10	14	22	—	1	5	5	12
Ohio	5	4	14	29	40	4	1	5	12	8
Wisconsin	—	0	5	—	5	—	0	2	—	4
<b>W.N. Central</b>	4	5	32	21	22	1	3	15	10	4
Iowa	—	0	0	—	—	—	0	0	—	—
Kansas	2	0	3	6	5	—	0	1	2	—
Minnesota	—	0	29	—	—	—	1	14	—	—
Missouri	2	2	4	10	14	1	0	2	6	4
Nebraska§	—	0	3	3	1	—	0	3	2	—
North Dakota	—	0	3	—	—	—	0	1	—	—
South Dakota	—	0	2	2	2	—	0	0	—	—
<b>S. Atlantic</b>	11	23	49	104	98	—	6	14	18	26
Delaware	—	0	1	—	1	—	0	0	—	—
District of Columbia	—	0	3	—	—	—	0	0	—	—
Florida	4	6	16	34	23	—	1	5	4	1
Georgia	5	4	12	30	20	—	0	5	—	9
Maryland§	—	4	9	22	23	—	1	5	10	8
North Carolina	—	1	22	2	13	—	0	0	—	—
South Carolina§	2	1	7	7	7	—	1	4	4	2
Virginia§	—	3	11	9	9	—	0	3	—	6
West Virginia	—	0	3	—	2	—	0	1	—	—
<b>E.S. Central</b>	1	4	13	10	23	—	2	11	1	11
Alabama§	N	0	0	N	N	N	0	0	N	N
Kentucky	—	1	3	2	6	N	0	0	N	N
Mississippi	N	0	0	N	N	—	0	2	—	2
Tennessee§	1	3	13	8	17	—	2	9	1	9
<b>W.S. Central</b>	8	6	29	24	20	4	5	33	14	11
Arkansas§	—	0	2	—	3	—	0	1	1	2
Louisiana	—	0	4	—	3	—	0	4	—	4
Oklahoma	2	1	5	8	8	3	1	4	7	3
Texas§	6	4	24	16	6	1	2	29	6	2
<b>Mountain</b>	5	9	21	41	52	—	4	12	25	16
Arizona	4	4	10	26	21	—	2	8	19	12
Colorado	—	3	8	8	11	—	1	4	3	2
Idaho§	1	0	2	2	2	—	0	1	1	—
Montana§	N	0	0	N	N	N	0	0	N	N
Nevada§	—	0	1	—	—	—	0	1	1	—
New Mexico§	—	1	4	—	8	—	0	4	—	1
Utah	—	1	6	5	9	—	0	2	1	1
Wyoming§	—	0	1	—	1	—	0	0	—	—
<b>Pacific</b>	1	3	7	8	11	1	0	4	6	3
Alaska	—	0	3	1	1	1	0	4	6	3
California	N	0	0	N	N	N	0	0	N	N
Hawaii	1	2	5	7	10	—	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	4	—	—	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 (NNDS 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 February 2, 2008, and February 3, 2007 (5th Week)\***

Reporting area	<i>Streptococcus pneumoniae</i> , 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							
<b>United States</b>	33	45	97	288	362	3	8	23	31	53	133	214	278	692	855
<b>New England</b>	1	1	7	5	24	—	0	2	1	—	7	5	14	20	15
Connecticut	—	0	5	—	15	—	0	2	—	—	—	0	5	—	2
Maine§	—	0	1	1	3	—	0	1	1	—	—	0	2	—	—
Massachusetts	—	0	0	—	—	—	0	0	—	—	6	3	8	18	9
New Hampshire	—	0	0	—	—	—	0	0	—	—	1	0	3	1	2
Rhode Island§	—	0	3	2	4	—	0	1	—	—	—	0	5	1	2
Vermont§	1	0	2	2	2	—	0	1	—	—	—	0	5	—	—
<b>Mid. Atlantic</b>	4	2	9	18	25	—	0	5	1	4	38	34	46	151	139
New Jersey	—	0	0	—	—	—	0	0	—	—	6	4	9	19	17
New York (Upstate)	1	1	5	3	5	—	0	4	—	1	4	3	7	6	6
New York City	—	0	0	—	—	—	0	0	—	—	27	18	35	102	72
Pennsylvania	3	1	6	15	20	—	0	2	1	3	1	8	17	24	44
<b>E.N. Central</b>	5	10	31	56	114	—	2	10	8	13	9	15	25	52	82
Illinois	—	1	7	—	20	—	0	5	—	4	—	7	14	3	40
Indiana	—	2	22	13	14	—	0	9	1	1	2	1	6	7	4
Michigan	—	0	1	2	—	—	0	1	—	—	—	2	9	1	11
Ohio	5	6	23	41	80	—	1	3	7	8	5	4	10	35	23
Wisconsin	N	0	0	N	N	—	0	0	—	—	2	1	4	6	4
<b>W.N. Central</b>	2	2	49	21	26	—	0	3	—	3	1	7	14	16	16
Iowa	—	0	0	—	—	—	0	0	—	—	—	0	2	—	—
Kansas	—	0	7	2	15	—	0	1	—	2	1	0	2	1	1
Minnesota	—	0	46	—	—	—	0	3	—	—	—	1	4	5	5
Missouri	2	1	8	19	10	—	0	1	—	—	—	4	10	9	10
Nebraska§	—	0	1	—	—	—	0	0	—	—	—	0	1	1	—
North Dakota	—	0	0	—	—	—	0	0	—	—	—	0	1	—	—
South Dakota	—	0	1	—	1	—	0	1	—	1	—	0	3	—	—
<b>S. Atlantic</b>	10	20	43	140	122	3	4	12	18	27	38	50	85	171	163
Delaware	—	0	1	1	—	—	0	1	—	—	—	0	3	—	2
District of Columbia	—	0	1	—	—	—	0	0	—	—	4	3	12	10	16
Florida	8	11	27	85	74	2	2	7	13	15	9	17	34	64	43
Georgia	2	6	19	52	44	—	1	5	4	10	—	9	36	3	11
Maryland§	—	0	1	1	—	1	0	0	1	—	5	6	15	29	32
North Carolina	—	0	0	—	—	—	0	0	—	—	9	5	23	37	31
South Carolina§	—	0	0	—	—	—	0	0	—	—	3	1	11	12	9
Virginia§	N	0	0	N	N	—	0	0	—	—	8	4	16	16	18
West Virginia	—	1	8	1	4	—	0	1	—	2	—	0	1	—	1
<b>E.S. Central</b>	10	3	10	42	21	—	1	3	2	1	17	19	31	80	55
Alabama§	N	0	0	N	N	—	0	0	—	—	9	7	17	32	19
Kentucky	—	0	2	6	4	—	0	1	—	—	2	1	7	7	7
Mississippi	—	0	0	—	—	—	0	0	—	—	2	2	14	7	8
Tennessee§	10	3	10	36	17	—	1	3	2	1	4	7	15	34	21
<b>W.S. Central</b>	1	2	12	2	23	—	0	3	—	3	2	37	55	104	116
Arkansas§	1	0	1	1	—	—	0	0	—	—	2	2	10	7	4
Louisiana	—	1	4	1	11	—	0	2	—	1	—	10	23	4	15
Oklahoma	—	0	10	—	12	—	0	2	—	2	—	1	3	6	10
Texas§	—	0	0	—	—	—	0	0	—	—	—	24	39	87	87
<b>Mountain</b>	—	1	5	4	7	—	0	2	—	2	1	7	25	6	48
Arizona	—	0	0	—	—	—	0	0	—	—	1	3	17	2	24
Colorado	—	0	0	—	—	—	0	0	—	—	—	1	3	1	2
Idaho§	N	0	0	N	N	—	0	0	—	—	—	0	1	—	—
Montana§	—	0	0	—	—	—	0	0	—	—	—	0	3	—	1
Nevada§	—	0	3	3	5	—	0	2	—	1	—	2	6	3	9
New Mexico§	—	0	1	—	—	—	0	0	—	—	—	1	3	—	9
Utah	—	0	5	1	1	—	0	2	—	1	—	0	2	—	2
Wyoming§	—	0	2	—	1	—	0	1	—	—	—	0	1	—	1
<b>Pacific</b>	—	0	0	—	—	—	0	1	1	—	20	40	60	92	221
Alaska	—	0	0	—	—	—	0	0	—	—	—	0	1	—	1
California	N	0	0	N	N	—	0	0	—	—	7	37	57	61	208
Hawaii	—	0	0	—	—	—	0	1	1	—	—	0	2	3	—
Oregon§	N	0	0	N	N	—	0	0	—	—	—	0	2	2	1
Washington	N	0	0	N	N	—	0	0	—	—	13	3	12	26	11
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	—	—	4	2	10	5	10
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

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† Includes cases of invasive pneumococcal disease caused by drug-resistant *S. pneumoniae* (DRSP) (NNDSS event code 11720).

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