

## World Pneumonia Day — November 12, 2011

Pneumonia kills more children than any other illness; among approximately 9 million children aged <5 years who die each year worldwide, 1.6 million die from pneumonia (1). At the 2010 World Health Assembly, a resolution on the prevention and control of childhood pneumonia was passed (2). The resolution stated that leaders in each country should implement comprehensive plans to reduce pneumonia deaths. This effort will support United Nations Millennium Development Goal 4, which states that childhood mortality should be reduced by two thirds from 1990 to 2015 (3).

Illness and deaths from pneumonia can be reduced with the use of *Streptococcus pneumoniae* (pneumococcus), *Haemophilus influenzae* type b (Hib), influenza, and measles vaccines; antimicrobial treatments; and supportive health care, among other strategies.

To raise awareness of the effects of pneumonia globally, the third annual World Pneumonia Day, November 12, 2011, is being promoted by a coalition of approximately 120 major health, humanitarian relief, advocacy, faith-based, government, and other organizations; CDC and United Nations Children's Fund (UNICEF) are providing technical assistance. Events are scheduled around the world. More information is available at <http://worldpneumoniaday.org>.

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## Invasive Pneumococcal Disease and 13-Valent Pneumococcal Conjugate Vaccine (PCV13) Coverage Among Children Aged ≤59 Months — Selected U.S. Regions, 2010–2011

On March 12, 2010, the Advisory Committee on Immunization Practices (ACIP) published recommendations for use of a newly licensed, 13-valent pneumococcal conjugate vaccine (PCV13) to replace the 7-valent vaccine (PCV7) for all children and for a supplemental dose for those aged 14 through 59 months (1). PCV is given routinely to children at ages 2, 4, and 6 months, and a booster dose is given at 12–15 months (1). PCV13 includes antigens of six pneumococcal serotypes in addition to those in PCV7 (1). Children only vaccinated with PCV7 are susceptible to those six serotypes, which can cause invasive pneumococcal disease (IPD) and death. During 2010 and 2011, CDC evaluated available data to assess the occurrence of PCV13-type IPD cases and PCV13 vaccination coverage among children aged ≤59 months. During May 1, 2010–April 30, 2011, 63 vaccine-eligible children with IPD caused by a serotype that would have been prevented by PCV13 were identified within 12 study regions. Most of those children were aged 24 through 59 months and were vaccinated completely with PCV7 but had not received the recommended supplemental dose of PCV13. Immunization Information System (IIS) sentinel site data from March 2010–June 2011 indicated that the proportion of PCV7-vaccinated children who had received the PCV13 supplemental dose was only

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37%. Similarly, among children aged  $\leq 59$  months requiring additional primary series doses, PCV13 coverage was only 46%. Given the potential for missed PCV13 vaccination, health-care providers should recommend PCV13 vaccination for all eligible children aged 14 through 59 months during all visits, and continue to ensure receipt of the full PCV13 primary series for younger children.

In June 2011, a girl in California, aged 2 years, died of IPD caused by serotype 19A, one of six serotypes included in PCV13 but not in PCV7. The child had received 3 doses of PCV7 but had not received PCV13. The California Department of Public Health identified an additional 30 PCV13-eligible children who had developed nonfatal IPD caused by the pneumococcal serotypes not covered by PCV7 and who became ill after PCV13 was recommended by ACIP. In August 2011, a health advisory was sent to California health-care providers to remind them of ACIP's recommendation for PCV13 use (2). To determine if other areas of the country were identifying cases of PCV13-type IPD among children eligible to receive PCV13 and to assess PCV13 vaccination coverage among children aged  $\leq 59$  months, CDC assessed data from 12 geographic regions participating in its ongoing PCV13 Vaccine Effectiveness Evaluation (3) and from eight IIS sentinel sites (4).

The PCV13 Vaccine Effectiveness Evaluation used data from Active Bacterial Core surveillance (ABCs), an active, population-based and laboratory-based surveillance system for monitoring invasive bacterial pathogens, and the Epidemiology

and Laboratory Capacity for Infectious Diseases (ELC) network, a group of U.S. sites supported by CDC to strengthen their capacity to address infectious disease threats (3). Children aged 2 months through 59 months who 1) were identified as having IPD by routine surveillance at ABCs and ELC sites, 2) were recommended by ACIP to receive PCV13, and 3) had a pneumococcal isolate available for serotyping were eligible for inclusion in the PCV13 Vaccine Effectiveness Evaluation. The catchment area for the evaluation comprised the 10 ABCs sites, (Connecticut, Minnesota, and New Mexico, and selected counties in California, Colorado, Georgia, Maryland, New York, Oregon, and Tennessee), plus Utah and Los Angeles County from the ELC sites, with a total population of 3.2 million children aged  $\leq 59$  months (5). Cases included in this analysis occurred in children enrolled in the PCV13 Vaccine Effectiveness Evaluation who had IPD caused by one of six serotypes included in PCV13 but not PCV7 and a complete vaccination history available at the time of analysis, and who were eligible to receive PCV13 at least 2 weeks before diagnosis of IPD.

During May 1, 2010–April 30, 2011, 135 cases of IPD caused by serotypes unique to PCV13 were identified among children aged 2 through 59 months. Among those, 81 (58%) had a complete vaccination history; of these, 66 (81%) had no previous PCV13 dose recorded. Three of the 66 cases involved children who were ineligible to receive PCV13 because of dates of PCV7 receipt and timing of disease diagnosis. Of the 63 remaining cases, 43 (68%) involved children aged 24–48

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**months.** Nearly all of these children (94%) had no underlying medical conditions. Among the 63 children, 48 (76%) were hospitalized; no deaths were reported. Thirty-nine of the children (62%) had received a full, 4-dose PCV7 series but had not received a supplemental PCV13 dose, and 11 others (18%) had received 3 doses of PCV7 but had not received a fourth pneumococcal vaccine dose, which should have been PCV13 (Figure 1) (1).

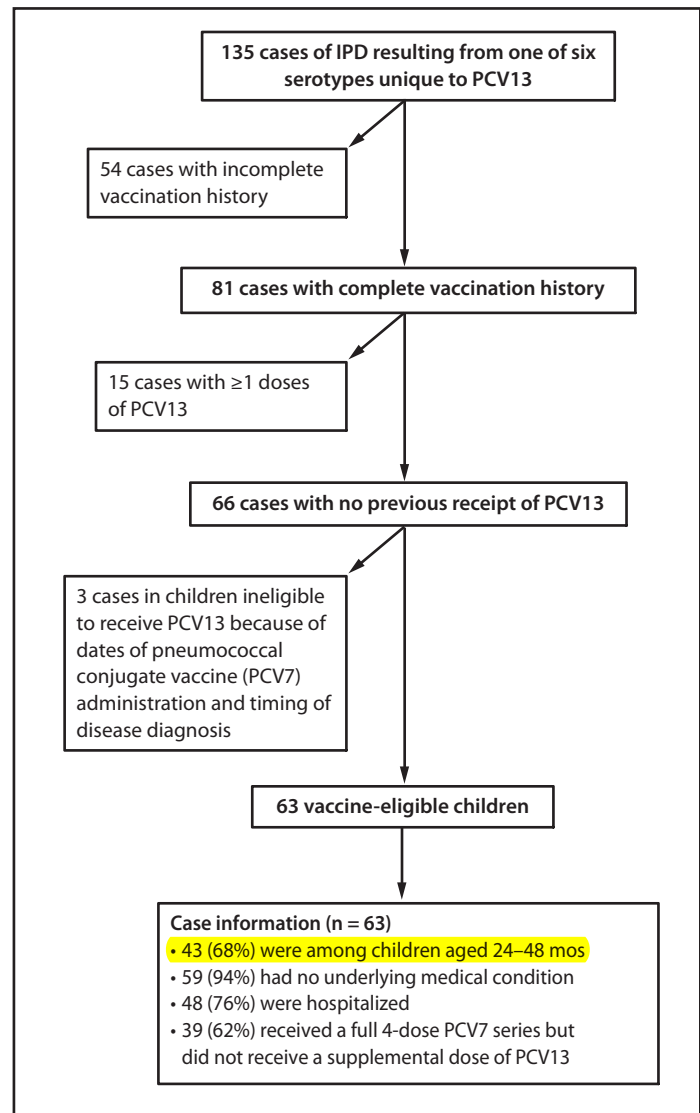
To assess coverage with PCV13, CDC collected data from the eight state and city-based IIS sentinel sites (4). Those collaborating sites include parts of Arizona, Colorado, Michigan, Minnesota, Oregon, and Wisconsin, all of North Dakota, and New York City, and include nearly 2 million children aged <6 years. Data on receipt of PCV13 were collected from March 2010, when PCV13 was first recommended, through June 2011 on children aged 0 through 11 months, 12 through 23 months, and 24 through 59 months as of March 2010, by primary PCV7 series completion status. A complete primary PCV7 series was defined as  $\geq 4$  doses, if the fourth dose was administered at age  $\geq 12$  months; 3 doses, if the third dose was administered at age  $\geq 12$  months; 2 doses, if both doses were administered at age  $\geq 12$  months; or 1 dose, if administered at age 24 to <60 months. Overall estimates were calculated by averaging unweighted site-specific estimates. Additionally, to evaluate the overall transition from PCV7 to PCV13, all sites reported the total number of doses administered weekly, by PCV type, during March 7–August 21, 2010.

Among approximately 850,000 children aged 12 through 59 months with a complete PCV7 series as of March 2010, 37% subsequently received the supplemental PCV13 dose as of June 30, 2011. The proportion of children receiving the dose was lower among children aged 24 through 59 months (32%) compared with children aged 12 through 23 months (58%) (Table). Among nearly 700,000 children aged 0 through 59 months with an incomplete primary PCV7 series as of March 2010, PCV13 coverage reached 46% by June 30, 2011. Similarly, children aged 24 through 59 months were less likely (14%) than younger children to receive a PCV13 dose (0 through 11 months: 71%; 12 through 23 months: 45%). Initial coverage with PCV13 occurred quickly after vaccine recommendation (Figure 2). By the week of April 18, the number of weekly PCV13 doses administered exceeded the number of weekly PCV7 doses administered. However, PCV7 continued to be used for a small proportion of children through August 2010.

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**FIGURE 1.** Invasive pneumococcal disease (IPD) resulting from pneumococcal serotypes unique to 13-valent pneumococcal conjugate vaccine (PCV13), exclusion criteria applied, and characteristics of affected children aged  $\leq 59$  months — CDC's PCV13 Vaccine Effectiveness Evaluation,\* United States, May 2010–April 2011



\* Twelve areas across the United States participate in CDC's ongoing PCV13 Vaccine Effectiveness Evaluation, representing a population of 3.2 million children aged  $\leq 59$  months.

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### Editorial Note

Within 2 months of the ACIP recommendation, PCV13 accounted for more than half of the weekly PCV doses administered. In spite of this rapid transition, not all children eligible for a supplemental dose are receiving it, leaving them more likely to develop IPD secondary to one of six serotypes

**TABLE. Percentage of children aged ≤59 months who received an age-appropriate 13-valent pneumococcal conjugate vaccine (PCV13) dose, by primary 7-valent pneumococcal conjugate vaccine (PCV7) series completion status and age group — Immunization Information System (IIS) sentinel sites, United States, March 12, 2010–June 30, 2011**

Age group (mos)*	Enrolled in IIS in birth range	Completed† PCV7 series*		Did not complete‡ PCV7 series*	
	No.	No.	Received PCV13§ (%)	No.	Received PCV13§ (%)
0 through 11	288,671	—	—	288,671	(71)
12 through 23	297,285	160,565	(58)	136,720	(45)
24 through 59	953,295	694,135	(32)	259,160	(14)

\* As of March 12, 2010, when the Advisory Committee on Immunization Practices (ACIP) published recommendations for use of PCV13.

† Defined as ≥4 doses if fourth dose was administered at age ≥12 months, 3 doses if third dose administered at age ≥12 months, 2 doses if both doses were administered at age ≥12 months, or 1 dose if administered at age 24 to <60 months.

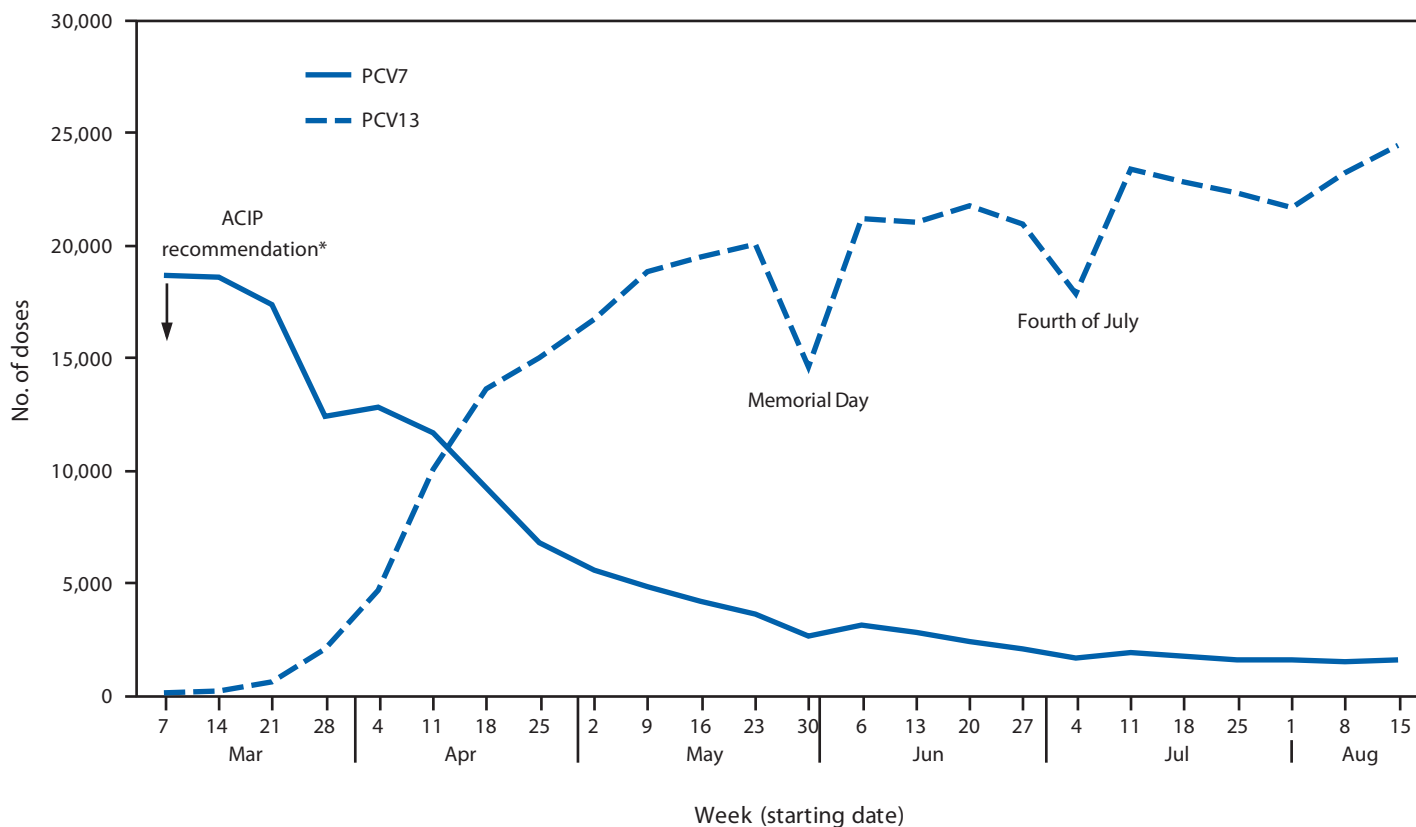
‡ Incomplete as of March 12, 2010; includes children who received no PCV doses. All children 0 through 11 months have an incomplete PCV series because a complete series requires at least 1 dose at ≥12 months.

§ On or after March 12, 2010. Unweighted average across sites.

uniquely covered by PCV13. Current PCV13 vaccination trends suggest that the majority of children not receiving the supplemental dose are aged 24 through 59 months rather than 12 through 23 months.

Health-care providers rapidly transitioned from PCV 7 to PCV13 administration. To facilitate the rapid transition from PCV7 to PCV13, the manufacturer accepted returns of PCV7 from public and private providers. In the public sector, PCV13 was available as of March 18, 2010, and all unused PCV7 had to be returned by May 10, 2010, to receive credit from the manufacturer. By July 2010, Pfizer reported that >90% of its private shipments of pneumococcal conjugate vaccines were for PCV13 (P.L. Alexa, Pfizer Inc., personal communication, July 2010). The underlying factors contributing to PCV13 coverage differences across age groups could not be determined with certainty. Lower coverage among the oldest age group might be related to fewer preventive care visits and vaccination opportunities compared with younger children (6), decreased perceived risk for invasive disease among the older children (7),

**FIGURE 2. Pneumococcal conjugate vaccine doses administered to children aged 0 through 59 months, by vaccine type and week — Immunization Information System sentinel sites, United States, March 7–August 21, 2010**



**Abbreviations:** ACIP = Advisory Committee on Immunization Practices; PCV7 = 7-valent pneumococcal conjugate vaccine; PCV13 = 13-valent pneumococcal conjugate vaccine.

\* CDC. Licensure of a 13-valent pneumococcal conjugate vaccine (PCV13) and recommendations for use among children—Advisory Committee on Immunization Practices (ACIP), 2010. MMWR 2010;59:258–61.

**What is already known on this topic?**

On February 24, 2010, a 13-valent pneumococcal conjugate vaccine (PCV13) was licensed and in March 2010, the Advisory Committee for Immunization Practices (ACIP) published recommendations to use PCV13 exclusively in place of the 7-valent vaccine (PCV7) and to administer a single supplemental dose of PCV13 to all children aged 14 through 59 months who have received an age-appropriate series of PCV7.

**What is added by this report?**

Children are developing invasive pneumococcal disease (IPD) caused by serotypes that could be prevented by PCV13 but not PCV7. In June 2011, a child, who had received 3 doses of PCV7 died of IPD caused by one of six serotypes to which PCV13 uniquely provides protection. In an evaluation of data from CDC's ongoing PCV13 Vaccine Effectiveness Evaluation, 63 children eligible but not vaccinated with PCV13 developed IPD caused by one those six serotypes. Vaccination trends at eight Immunization Information System sentinel sites indicated that receipt of the supplemental PCV13 dose is <40% among PCV7-vaccinated children.

**What are the implications for public health practice?**

Immunization programs and vaccination providers should encourage parents of all children aged 14 through 59 months who have received an age-appropriate PCV7 series to have their child receive a single supplemental dose of PCV13. Providers should take advantage of all office visits to vaccinate all eligible children with PCV13 to increase vaccination coverage.

and health-care provider lack of awareness of or inconsistency in implementing PCV recommendations for older children (8).

Estimates from the National Immunization Survey show coverage with  $\geq 4$  doses of PCV increased from 80% in 2009 to 83% in 2010 and remained high at 93% for  $\geq 3$  doses of PCV among children aged 19–35 months. Although coverage levels for PCV continue to increase, careful monitoring of coverage levels overall and across subpopulations (i.e., older children) will be important to ensure that all children are protected adequately (9).

The findings in this report are subject to at least three limitations. First, although the ABCs, ELC, and IIS systems are important sources of U.S. population-based data for surveillance of invasive bacterial disease incidence and patterns of vaccine coverage, they represent a select sample of U.S. regions and the findings might not be nationally representative. Second, although IIS sentinel site data are monitored for accuracy, some PCV13 doses might have been misclassified as PCV7 in IIS, thereby underestimating PCV13 coverage. Finally, although no reports of difficulty in obtaining PCV13 have occurred, some vaccination providers might have experienced a delay in receipt of vaccine.

To prevent IPD among children, health-care providers should administer a single supplemental dose of PCV13 to all children aged 14 through 59 months who have received an age-appropriate number of PCV7 doses to provide additional protection against the six serotypes unique to PCV13 (1). Additionally, health-care providers should complete the PCV7 series with PCV13, and continue to ensure that all children receive timely receipt of the full primary series as recommended by ACIP. No PCV7 should be used at this time. To increase PCV13 coverage, health-care providers should take advantage of opportunities to provide the supplemental dose of PCV13 to age-eligible patients during any health-care visit.

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## Progress Toward Poliomyelitis Eradication — India, January 2010–September 2011

The Global Polio Eradication Initiative was launched in 1988 (1). In 1995, when eradication activities were initiated in India, an estimated 50,000 polio cases were occurring each year (2). By 2006, transmission of indigenous wild poliovirus (WPV) had been interrupted in all countries except India, Afghanistan, Pakistan, and Nigeria (1). During 2006–2009, India annually reported 559 to 874 cases of confirmed WPV, with cases centered in the northern states of Uttar Pradesh and Bihar (3). These cases accounted for 43% of confirmed cases of WPV reported worldwide during this period. However, in 2010, only 42 WPV cases were reported in India, and in 2011, only one WPV case had been confirmed as of October 31. This report updates previous reports (2,3) and summarizes progress toward polio eradication in India during January 2010–September 2011. Throughout India, the most recent confirmed WPV type 3 (WPV3) case occurred on October 22, 2010, in Jharkhand, and the most recent confirmed WPV type 1 (WPV1) case occurred on January 13, 2011, in West Bengal; WPV2 has not been reported in India since 1999. Importation of WPV into India is a risk, and undetected low-level WPV transmission is a possibility, requiring high vaccination coverage in all states, continued focus on children in migrant and underserved populations, sensitive surveillance for prompt detection of any WPV, and preparedness to mount a robust emergency vaccination campaign in response to any WPV cases.

### Immunization Activities

The most recent population-based survey from 2009 found that nationwide routine vaccination coverage with 3 doses of trivalent oral polio vaccine (tOPV) was 70% among children aged 12–23 months (4). This percentage is similar to the reported estimates of nationwide routine vaccination coverage in 2010 with 3 doses of tOPV by age 12 months (5). The survey estimates for coverage in Bihar (62%; increased from 51% in 2006) and Uttar Pradesh (54%; increased from 50% in 2006) were among the lowest in the country, whereas coverage was higher in Jharkhand (70%) and West Bengal (74%) (4).

For the past several years, increased attention in India during supplementary immunization activities (SIAs)\* has

focused on vaccinating 1) populations at high risk for polio in areas where polio has been endemic and 2) large populations of migrants, who contributed to the persistence and spread of WPV transmission (3). In January 2010, bivalent OPV (bOPV) types 1 and 3 was introduced for use in SIAs, largely replacing monovalent OPVs (mOPVs) (3).

SIAs conducted in India during 2010–2011 included two national immunization days each year. In addition, six sub-national immunization days (SNIDs) and four large-scale (multidistrict) mop-up† activities were conducted during 2010, and six SNIDs and one large-scale mop-up were conducted during January–September 2011 (Figure 1). The response to the WPV case in West Bengal in 2011 included three SIAs, using a combination of mOPV type 1 and bOPV conducted within 7 weeks of notification of the case (the first SIA was held 7 days after detection), followed by monthly SIAs using bOPV for 6 months (Figure 2).

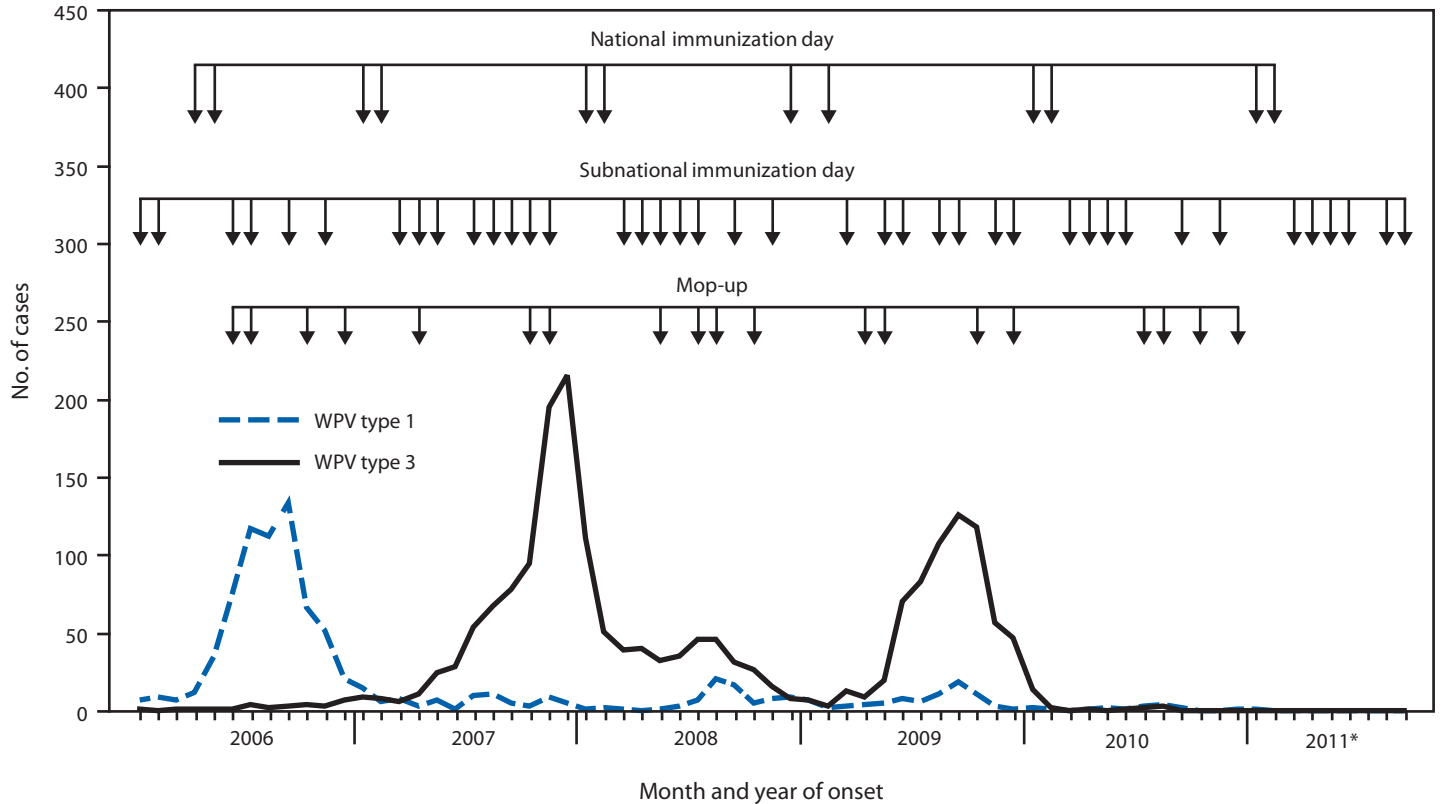
Monitoring data§ are used to estimate the proportion of children missed in each SIA. In 2011, the mean percentage of missed children in the general population aged <2 years based on these SIA surveys was 0.3% in Bihar, 1.8% in Uttar Pradesh, 3.7% in Jharkhand, and 6.1% in West Bengal. Efforts to identify and vaccinate urban slum dwellers and specific migrant populations (e.g., construction laborers, nomads, and brick kiln workers) were enhanced further during 2010–2011. The percentage of missed children per SIA in the migrant population aged <2 years, based on surveys conducted after SIA rounds in 2011 in nine states with large numbers of these populations, was 0.4%–12.3% (mean: 2.3%). In Uttar Pradesh, the mean percentage of children missed in migrant populations (1.3%) was comparable to the mean percentage of children missed in the general population aged <2 years (1.8%). In West Bengal, the mean percentage of children missed in migrant populations aged <2 years (7.3%) was higher than the overall mean among migrant populations in eight other states (2.0%) and remains higher than the mean percentage of children missed in the general population in that state (6.1%).

† Mop-up rounds are intensive house-to-house SIAs conducted in a limited area (groups of districts) with evidence of recent transmission.

§ SIA monitoring data are obtained from systematic surveys conducted after every SIA in high-risk areas to identify children aged <2 years who were missed with vaccination.

\* SIAs are mass campaigns conducted over a period of days in which 1 dose of OPV is administered to all children aged <5 years, regardless of vaccination history. Surveillance data analysis determines the geographic extent of campaigns (i.e., national or subnational).

**FIGURE 1. Number of wild poliovirus (WPV) cases, by type, month of onset, and type of supplementary immunization activity — India, January 2006–September 2011**



\* Data as of October 31, 2011.

## WPV Surveillance

**Acute flaccid paralysis (AFP) surveillance.** In India, the national nonpolio AFP (NPAFP) rate,<sup>‡</sup> a proxy measure of polio surveillance system sensitivity, was 12.7 per 100,000 children aged <15 years in 2010 and 12.1 per 100,000 (annualized) during January–September 2011. During that period, the highest state-level NPAFP rates were in Bihar (37.9) and Uttar Pradesh (23.9); three of 35 states and union territories had NPAFP rates <2 per 100,000. Adequate stool specimen collection\*\* in India was 83% in 2010 and 84.1% during January–September 2011; in five states, adequate specimen collection was <80% during January–September 2011.<sup>††</sup>

**Environmental surveillance.** Weekly testing of wastewater for poliovirus began in Mumbai in June 2001 and in Delhi in May 2010, and biweekly testing began in Patna, Bihar, in

April 2011. Both WPV1 and WPV3 were detected in wastewater at Delhi sites during 2010; WPV3 was last detected in July 2010, and WPV1 was last detected in August 2010. The most recent WPV from wastewater in India was WPV1 isolated in November 2010 in Mumbai. No WPV has been isolated from Patna wastewater. All WPV1 and WPV3 isolates from wastewater during 2010–2011 were genetically related to WPV1 and WPV3 circulating in central Bihar during 2009.

## WPV Epidemiology

During 2010, a total of 42 WPV cases (18 WPV1 and 24 WPV3) were reported in India in 17 districts in seven states (Figure 3). During January–September 2011, only one WPV case (WPV1) was reported in India, in West Bengal, compared with 40 WPV cases (17 WPV1 and 23 WPV3) from 17 districts in seven states during the same period during 2010. All WPV1 isolates from patients during 2010–2011 were related genetically to WPV circulating in central Bihar during 2009.

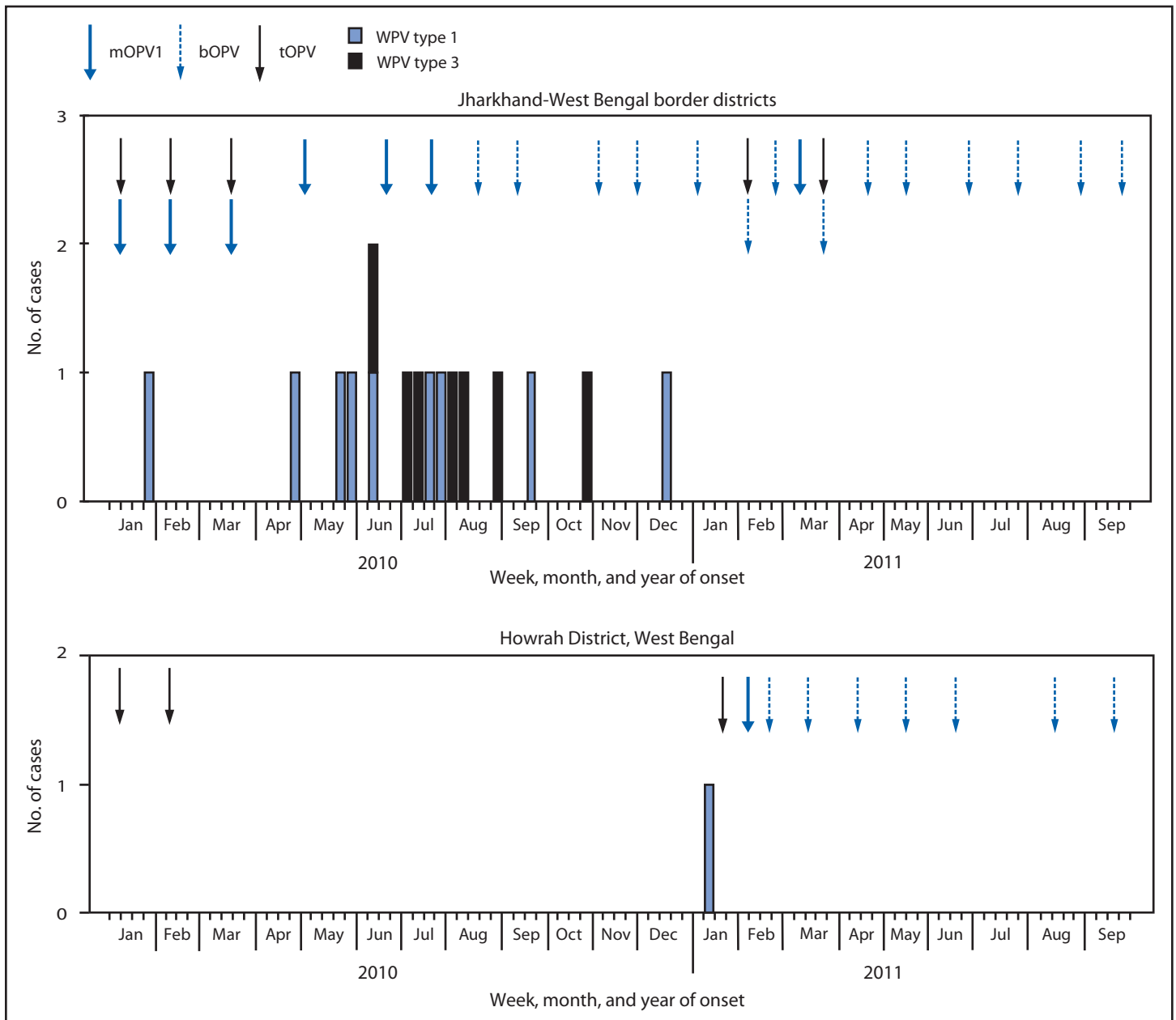
The most recent confirmed WPV1 case in India occurred on January 13, 2011, in a child from a community in which the rate of vaccine refusal was high during previous SIAs in Howrah District, West Bengal. The most recent confirmed

<sup>‡</sup> The NPAFP rate is the number of AFP cases not associated with WPV per 100,000 children aged <15 years. India's operational target for each district is two or more AFP cases per 100,000.

\*\* The percentage of reported AFP cases with two stool specimens collected within 14 days of paralysis onset with at least 24 hours between the two specimens (target: ≥80%).

†† The eight polio laboratories in India processed 109,057 stool specimens during 2010 and 85,161 stool specimens during January–September 2011.

FIGURE 2. Number of wild poliovirus (WPV) cases (n = 17), by type, week of onset, and vaccine used in supplementary immunization activities — selected districts, India, January 2010—September 2011



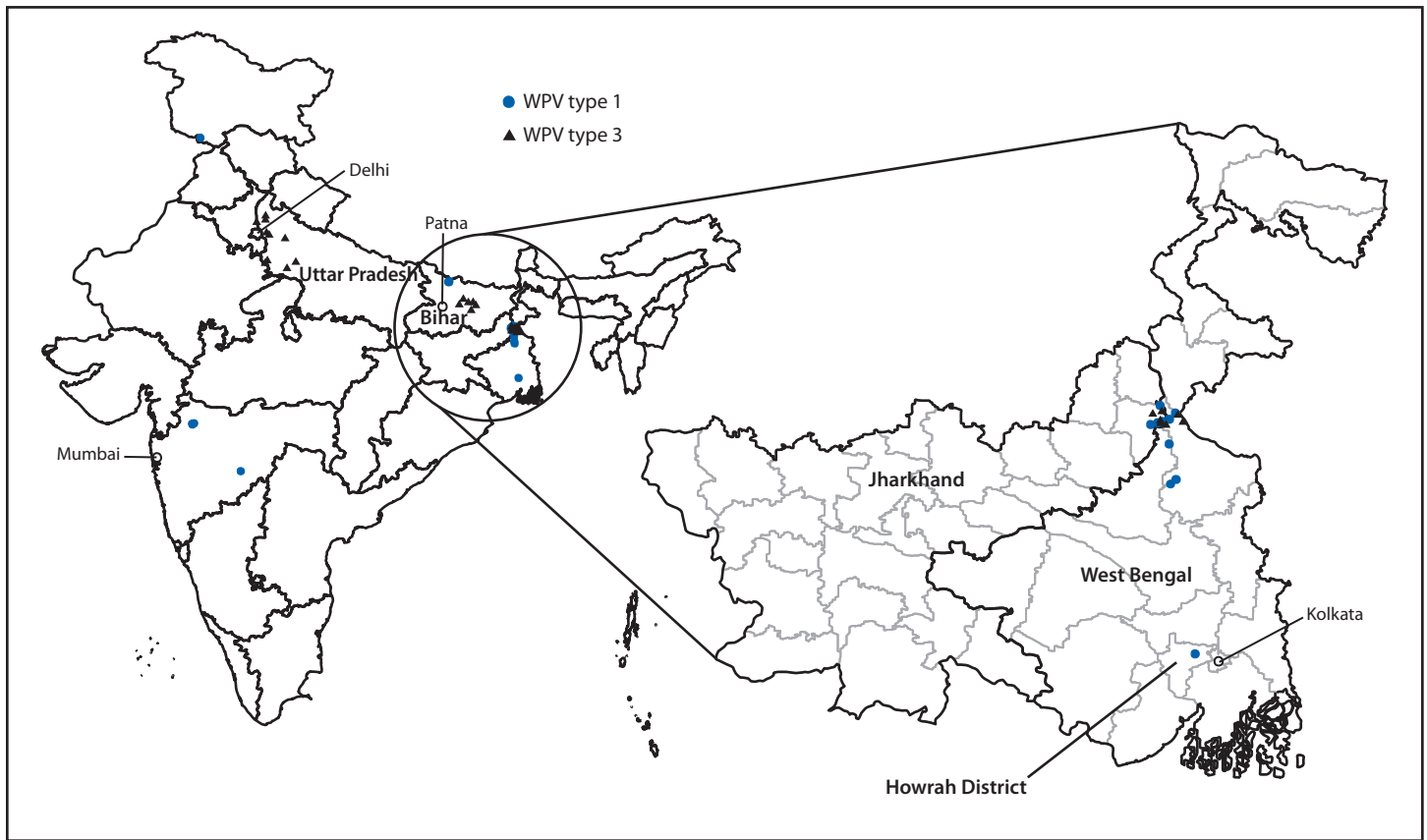
Abbreviations: mOPV1 = monovalent oral poliovirus vaccine type 1; bOPV = bivalent oral poliovirus vaccine; tOPV = trivalent oral poliovirus vaccine.

WPV3 case occurred on October 22, 2010, in Jharkhand. During 2010, simultaneous transmission of WPV1 and WPV3 occurred in Jharkhand and West Bengal around their common border (Figures 2 and 3). However, the WPV1 isolated from the patient in Howrah was not directly related genetically to WPV1 circulating at the border in Jharkhand and West Bengal during 2010, but was related genetically to WPV circulating in Bihar in September 2009 and also isolated from wastewater in Delhi in August 2010.

Among the 43 WPV cases reported during 2010–2011, 30 (70%) occurred among children aged <2 years. Of these children, six (14%) had received 1–3 OPV doses, 11 (26%) had received 4–7 doses, 24 (56%) had received >7 doses, one (2%) had unknown vaccination status, and one (2%) had not received any OPV doses (the child with WPV1 in West Bengal in January 2011).



FIGURE 3. Wild poliovirus (WPV) cases (N = 43), by type — India and selected states, 2010 and 2011\*



\* Data as of October 31, 2011.

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### Editorial Note

During 2010 and 2011, India made substantial progress toward polio eradication. A year has passed since the last confirmed WPV3 case, and >9 months have passed since the last confirmed WPV1 case. The absence of any reported WPV cases since January, including during much of the June–November high-transmission season, is unprecedented. WPV was last detected in sewage in Delhi in August 2010 and in

Mumbai in November 2010. The subsequent lack of detection of WPV in any samples from any site is further indication that WPV transmission might have been interrupted. No WPV cases have been reported for >17 months and >12 months in the previously polio-endemic states of Uttar Pradesh and Bihar, respectively. If no WPV is identified throughout the high-transmission season in 2012, India will be regarded as polio-free. This would put the World Health Organization South-East Asia Region, of which India is a member, on track to be certified polio-free as early as 2014.

The introduction of bOPV in SIAs beginning in January 2010 likely contributed substantially to the simultaneous reduction in WPV1 and WPV3 cases in India. Previous SIAs were conducted predominantly using mOPV type 1 and occasionally using mOPV type 3; a clinical trial demonstrated the superiority of bOPV compared with tOPV and noninferiority compared with mOPV types 1 and 3 (6). The special attention focused on vaccination coverage of children in high-risk endemic areas and migrant populations during the last several years likely increased and sustained the levels of immunity needed to stop WPV transmission. Rapid response SIAs

**What is already known on this topic?**

India is one of four countries (the others are Afghanistan, Nigeria, and Pakistan) where wild poliovirus (WPV) remains endemic. Until 2010, most polio cases in India were reported in Uttar Pradesh and Bihar, two states with low routine vaccination coverage, lower vaccine effectiveness than elsewhere, and large migrant populations that require frequent supplementary immunization activities (SIAs) to control WPV transmission.

**What is added by this report?**

As of October 31, only one confirmed WPV case had been reported in India during January–September 2011, compared with 40 WPV cases during the same 9-month period in 2010. A year has passed since the most recent WPV3 case in India and more than 9 months since the last case of WPV1. This unprecedented finding is corroborated by the lack of any WPV isolation from wastewater samples since November 2010, and likely resulted from a combination of factors, including introduction of bivalent oral poliovirus vaccine types 1 and 3 in SIAs in 2010, targeting of migrant populations, and rapid outbreak response.

**What are the implications for public health practice?**

In India, the risk for importation or undetected WPV transmission remains, particularly in migrant populations. To ensure interruption of all WPV transmission, strong surveillance and high population immunity are needed in all states (with specific focus on migrant populations), as well as rapid response SIAs after any detected WPV cases. Elimination of WPV in India will establish that WPV transmission can be interrupted even in the most challenging of settings, remove the threat of importation from India, and provide impetus to the Global Polio Eradication Initiative goal of interrupting all WPV transmission.

contributed to successfully stopping WPV transmission after report of the case in Howrah, West Bengal. This response, led by the government and partners,<sup>§§</sup> included massive mobilization of human and financial resources, revision of detailed subdistrict SIA operational plans, retraining of vaccinators and supervisors, increased community outreach and mobilization, and enhanced monitoring in the outbreak areas. Of note is that routine vaccination coverage improved in both Bihar and Uttar Pradesh over the last several years at the same time the two states conducted almost monthly SIAs and frequent large-scale mop-ups.

AFP surveillance indicators have reached or greatly exceeded targets in the majority of states and territories since 2005. Continued vigilance is needed to ensure that all states and union territories reach targets for surveillance indicators and that high-risk populations are adequately included to achieve the highest sensitivity required for detecting any WPV circulation. Appropriately targeted environmental surveillance can

be more sensitive in detecting low-level WPV circulation than AFP surveillance (7). Sewage sampling is ongoing in Mumbai, Delhi, and Patna, Bihar, and is planned to begin in Kolkata, West Bengal, late in 2011.

Despite the absence of WPV cases in India since January 2011, the risk remains for WPV circulation among migrant populations and residents of high-risk areas in western Uttar Pradesh and central Bihar and in migrant populations in other states. In West Bengal, families within certain migrant populations continue to have higher proportions of undervaccinated children than families in migrant populations and the general population aged <2 years in other states, according to 2011 directed surveys of these populations.

Although India has served as a reservoir for importation to neighboring countries and some distant countries (8), the country also is at risk for WPV importations from other polio-affected areas. The recent polio outbreak in neighboring China resulting from WPV importation from Pakistan (9) is a reminder of the need for continued vigilance to ensure high population immunity in all states (with specific focus on migrant populations) along with rapid response SIAs after any detected WPV cases. Elimination of WPV in India will establish that WPV transmission can be interrupted even in the most challenging of settings, remove the threat of importation from India, and provide impetus to the Global Polio Eradication Initiative goal of interrupting all WPV transmission globally by the end of 2012.

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<sup>§§</sup> World Health Organization, United Nations Children's Fund (UNICEF), Rotary International and CORE Group.

# Vital Signs: Overdoses of Prescription Opioid Pain Relievers — United States, 1999–2008

On November 1, 2011, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).

## Abstract

**Background:** Overdose deaths involving opioid pain relievers (OPR), also known as opioid analgesics, have increased and now exceed deaths involving heroin and cocaine combined. This report describes the use and abuse of OPR by state.

**Methods:** CDC analyzed rates of fatal OPR overdoses, nonmedical use, sales, and treatment admissions.

**Results:** In 2008, drug overdoses in the United States caused 36,450 deaths. OPR were involved in 14,800 deaths (73.8%) of the 20,044 prescription drug overdose deaths. Death rates varied fivefold by state. States with lower death rates had lower rates of nonmedical use of OPR and OPR sales. During 1999–2008, overdose death rates, sales, and substance abuse treatment admissions related to OPR all increased substantially.

**Conclusions:** The epidemic of overdoses of OPR has continued to worsen. Wide variation among states in the nonmedical use of OPR and overdose rates cannot be explained by underlying demographic differences in state populations but is related to wide variations in OPR prescribing.

**Implications for Public Health Practice:** Health-care providers should only use OPRs in carefully screened and monitored patients when non-OPR treatments are insufficient to manage pain. Insurers and prescription drug monitoring programs can identify and take action to reduce both inappropriate and illegal prescribing. Third-party payers can limit reimbursement in ways that reduce inappropriate prescribing, discourage efforts to obtain OPR from multiple health-care providers, and improve clinical care. Changes in state laws that focus on the prescribing practices of health-care providers might reduce prescription drug abuse and overdoses while still allowing safe and effective pain treatment.

## Introduction

In 2007, nearly 100 persons per day died of drug overdoses in the United States (1). The death rate of 11.8 per 100,000 population in 2007 was roughly three times the rate in 1991. Prescription drugs have accounted for most of the increase in those death rates since 1999 (2). In 2009, 1.2 million emergency department (ED) visits (an increase of 98.4% since 2004) were related to misuse or abuse of pharmaceuticals, compared with 1.0 million ED visits related to use of illicit drugs such as heroin and cocaine (3). Prominent among these prescription drug–related deaths and ED visits are opioid pain relievers (OPR), also known as narcotic or opioid analgesics, a class of drugs that includes oxycodone, methadone, and hydrocodone, among others. OPR now account for more overdose deaths than heroin and cocaine combined. OPR frequently are diverted for nonmedical use by patients or their friends or sold on the street. In 2010, 4.8% of the U.S. population aged  $\geq 12$  years used OPR nonmedically (4). Nonmedical use of OPR costs insurance companies up to \$72.5 billion annually in health-care costs (5).

States regulate the use of prescription drugs, such as OPR, and the practices of prescribers and pharmacists. States also finance and regulate health care for Medicaid populations, which are at greater risk for overdose (6). States therefore have a central role in ensuring that OPR are used legally and safely.

Comparisons among jurisdictions in drug overdose mortality, nonmedical use of OPR, and OPR sales can help identify risk factors and effective prevention measures. Among the states, OPR sales varied fourfold in 2002 (7), and death rates for overdoses involving OPR varied from 1.8 to 15.6 per 100,000 population in 2006 (2). More rural and more impoverished counties tend to have higher prescription drug overdose death rates (8,9).

## Methods

For this report, death rates are based on the National Vital Statistics System multiple cause of death files (10). Rates were age-adjusted to the 2000 U.S. Census population using bridged-race\* population figures. Drug poisoning deaths, referred to as

\* Information about bridged-race categories is available at [http://www.cdc.gov/nchs/nvss/bridged\\_race.htm](http://www.cdc.gov/nchs/nvss/bridged_race.htm).

drug overdose deaths in this report, were defined as those with an underlying cause of death classified by the *International Classification of Diseases, 10th Revision* (ICD-10) external cause of injury codes as X40–X44, X60–X64, X85, or Y10–Y14. Rates include injury deaths of any intent (unintentional, suicide, homicide, or undetermined) for U.S. residents. Among deaths with drug overdose as the underlying cause, CDC identified the type of drug involved using ICD-10 codes: prescription drugs (T36–T39, T40.2–T40.4, T41–T43.5, and T43.7–T50.8), including prescription opioid pain relievers (T40.2–T40.4); illicit drugs (T40.1, T40.5, T40.7–T40.9, and T43.6); or only unspecified drugs (T50.9 alone). The prescription drug category includes some over-the-counter medications. Some deaths involved prescription and illicit drugs and are counted in both drug categories. Years of potential life lost (YPLL) before age 65 years were calculated by subtracting age at death from 65 years and summing to get the total YPLL.

Rates of nonmedical OPR use in the past year by state were obtained from the 2008–2009 National Surveys on Drug Use and Health (NSDUH) (11). Nonmedical use was defined as use of a prescription pain reliever without a prescription belonging to the respondent or use for the experience or feeling the drug causes. The prescription pain reliever category includes OPR and selected barbiturate combination products used for headaches.

Annual drug sales for 1999–2010 were determined from the Automation of Reports and Consolidated Orders System (ARCOS) of the Drug Enforcement Administration (DEA) (12). For this report, ARCOS sales data were used as a surrogate for OPR use. DEA provided data on sales to pharmacies, hospitals, and practitioners for codeine, fentanyl, hydrocodone, hydromorphone, meperidine, methadone, morphine, and oxycodone (Kyle Wright, personal communication, April 11, 2011). Sales of drugs to substance abuse treatment programs were not included. Amounts of drugs were standardized to morphine milligram equivalents (13).

The percentage of the state population below the federal poverty level by race and ethnicity during 2007–2008 was provided by the Kaiser Family Foundation (Rachel Licata, personal communication, August 10, 2011). Trends in substance abuse treatment admission rates were based on the Treatment Episode Data Set (14). Rates were calculated for admissions for treatment of substance abuse where the primary substance was an OPR.

Spearman's correlation coefficient was used to correlate the absolute increase in the non-Hispanic white overdose death rate during 1999–2008 with poverty level by state. Fisher's exact test was used to compare the proportions of states above and below national rates. Test results are statistically significant at  $p < 0.05$ .

## Results

In 2008, a total of 36,450 deaths were attributed to drug overdose, a rate of 11.9 per 100,000 population (Table 1), among which a drug was specified in 27,153 (74.5%) deaths. One or more prescription drugs were involved in 20,044 (73.8%) of the 27,153 deaths, and OPR were involved in 14,800 (73.8%) of the 20,044 prescription drug overdose deaths. Rates varied by sex, race/ethnicity, and age. For deaths involving OPR, the rate among non-Hispanic whites and American Indians/Alaska Natives was three times higher than the rates in blacks and Hispanic whites. All death rates were highest among persons aged 35–54 years. Overdose resulted in 830,652 YPLL before age 65 years, a number comparable to the YPLL from motor vehicle crashes.

Rates for all outcomes studied varied widely by state (Table 2, Figure 1)<sup>†</sup> Overdose death rates ranged from 5.5 per 100,000 population in Nebraska to 27.0 in New Mexico. The prevalence of nonmedical use of OPR during 2008–2009 ranged from 3.6% in Nebraska to 8.1% in Oklahoma. The rate of OPR sales ranged from 3.7 kg per 10,000 population in Illinois to 12.6 kg in Florida. The highest sales rates were clustered in the Southeast and the Northwest. Among the 27 states with overdose death rates above the national rate, 21 (77.8%) had rates of nonmedical use above the national rate. Among the 24 states with death rates at or below the national rate, six (25.0%) had rates of nonmedical use above the national rate ( $p < 0.001$ ). Among the 27 states with death rates above the national rate, 21 (77.8%) had rates of OPR sales above the national rate. Among the 24 states with death rates at or below the national rate, five (20.8%) had rates of OPR sales above the national rate ( $p < 0.001$ ).

During 1999–2008, overdose death rates, sales, and substance abuse treatment admissions related to OPR increased in parallel (Figure 2). The overdose death rate in 2008 was nearly four times the rate in 1999. Sales of OPR in 2010 were four times those in 1999. The substance abuse treatment admission rate in 2009 was almost six times the rate in 1999. The rate of sales of OPR in 2010, 7.1 kg per 10,000 population, was equivalent to 710 mg per person in the United States. The percentage of the non-Hispanic white population below the poverty level during 2007–2008 correlated positively with the increase in overdose death rates among non-Hispanic whites from 1999 to 2008 by state ( $r = 0.54$ ;  $p < 0.001$ ). Louisiana, Mississippi, Kentucky, and West Virginia had some of the largest mortality increases and some of the highest poverty levels among non-Hispanic whites.

<sup>†</sup> For this report, District of Columbia is grouped with the states.

TABLE 1. Drug overdose death rates by selected characteristics — National Vital Statistics System, United States, 2008

Characteristic	Age-adjusted rate*			
	All drugs <sup>†</sup>	Prescription drugs <sup>§</sup>	Opioid pain relievers <sup>¶</sup>	Illicit drugs <sup>**</sup>
<b>Overall</b>	<b>11.9</b>	<b>6.5</b>	<b>4.8</b>	<b>2.8</b>
<b>Sex</b>				
Men	14.8	7.7	5.9	4.3
Women	9.0	5.3	3.7	1.4
<b>Race/Ethnicity</b>				
White	13.2	7.4	5.6	2.8
Hispanic <sup>††</sup>	6.1	3.0	2.1	2.5
Non-Hispanic	14.7	8.4	6.3	2.9
Black	8.3	3.0	1.9	4.0
Asian/Native Hawaiian or Pacific Islander	1.8	1.0	0.5	0.6
American Indian/Alaska Native	13.0	8.4	6.2	2.7
<b>Age group (yrs)</b>				
0–14	0.2	0.2	0.1	— <sup>§§</sup>
15–24	8.2	4.5	3.7	2.2
25–34	16.5	8.8	7.1	4.4
35–44	20.9	11.0	8.3	5.3
45–54	25.3	13.8	10.4	6.0
55–64	13.0	7.3	5.0	2.5
≥65	4.1	3.0	1.0	0.3
<b>Intent</b>				
Unintentional	9.2	4.8	3.9	2.6
Undetermined	1.1	0.6	0.5	0.2
Suicide	1.6	1.1	0.5	0.1

\* Rate per 100,000 population age-adjusted to the 2000 U.S. standard population using the vintage 2008 population. Because deaths might involve both prescription and illicit drugs, some deaths are included in both categories.

<sup>†</sup> Deaths with underlying causes of unintentional drug poisoning (X40–44), suicide drug poisoning (X60–64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the *International Classification of Diseases, 10th Revision*.

<sup>§</sup> Drug overdose deaths, as defined, that have prescription drugs (T36–T39, T40.2–T40.4, T41–T43.5, and T43.7–T50.8) as contributing causes.

<sup>¶</sup> Drug overdose deaths, as defined, that had other opioids (T40.2), methadone (T40.3), and other synthetic narcotics (T40.4) as contributing causes.

<sup>\*\*</sup> Drug overdose deaths, as defined, that have heroin (T40.1), cocaine (T40.5), hallucinogens (T40.7–T40.9), or stimulants (T43.6) as contributing causes.

<sup>††</sup> Non-white Hispanics are included in the other racial groups.

<sup>§§</sup> Rate is not presented when the estimate is unstable because the number of deaths is less than 20.

## Conclusions and Comment

The epidemic of prescription drug overdoses in the United States has worsened over the last decade, and by 2008, drug overdose deaths (36,450) were approaching the number of deaths from motor vehicle crashes (39,973), the leading cause of injury death in the United States. Parallel trends in deaths and OPR sales between 1999 and 2008, combined with continuing upward trends in ED visits (4), OPR abuse treatment admissions (14), and OPR sales after 2008 suggest that the death rate also has increased since 2008. Preliminary 2009 death data are consistent with such an increase (15). These

## Key Points

- Death from opioid pain relievers (OPR) is an epidemic in the United States.
- Sales of OPR quadrupled between 1999 and 2010. Enough OPR were prescribed last year to medicate every American adult with a standard pain treatment dose of 5 mg of hydrocodone (Vicodin and others) taken every 4 hours for a month.
- Abuse of OPR costs health insurers approximately \$72.5 billion annually in health-care costs.
- State-based prescription drug monitoring program records and insurance claims information can identify and address inappropriate prescribing and use by patients. State laws and regulations based on these data need to be enacted, enforced, and rigorously evaluated.
- Additional information is available at <http://www.cdc.gov/vitalsigns>.

increases occurred despite numerous warnings and recommendations over the past decade for voluntary education of providers about more cautious use of OPR (16).

Differences in OPR overdose mortality by race/ethnicity match the pattern for medical and nonmedical use of OPR, with the lowest rates for medical and nonmedical use among Asians and blacks and the highest rates among American Indians/Alaska Natives and non-Hispanic whites (4,17). Differences in OPR overdose mortality by race and ethnicity cannot explain the wide variation in death rates among states, given the equally large differences in non-Hispanic white mortality between states. Nor can demographic differences fully explain the wide variations among states in the nonmedical use and sales of OPR. Montana and Iowa, for example, have largely non-Hispanic white populations but widely varying rates of nonmedical use and sales of OPR.

By 2010, enough OPR were sold to medicate every American adult with a typical dose of 5 mg of hydrocodone every 4 hours for 1 month. Increased use of OPR has contributed to the overall increases in rates of overdose death and nonmedical use, and variation among states in OPR sales probably contributes to state variation in these outcomes. Given that 3% of physicians accounted for 62% of the OPR prescribed in one study (18), the proliferation of high-volume prescribers can have a large impact on state use of OPR and overdose death rates. Large increases in overdoses involving the types of drugs sold by illegitimate pain clinics (i.e., “pill mills”) have been reported in Florida (19) and Texas (20). Such clinics provide OPR to large volumes of patients

TABLE 2. Rates of drug overdose death, nonmedical use of opioid pain relievers (OPR), and OPR sales, by state — United States

State	Drug overdose deaths*				OPR			
	Overall		Non-Hispanic whites		Nonmedical use <sup>†</sup>		Sales <sup>§</sup>	
	Rate	(SE)	Rate	(SE)	%	(SE)	Rate	(SE)
<b>National</b>	<b>11.9</b>	<b>(0.1)</b>	<b>14.7</b>	<b>(0.1)</b>	<b>4.8</b>	<b>(0.1)</b>	<b>7.1</b>	<b>(0.0)</b>
New Mexico	27.0	(1.2)	25.1	(1.7)	5.7 <sup>¶</sup>	(0.6)	6.7	(0.2)
West Virginia	25.8	(1.2)	26.6	(1.3)	5.9 <sup>¶</sup>	(0.6)	9.4	(0.2)
Nevada	19.6	(0.9)	27.5	(1.3)	5.9 <sup>¶</sup>	(0.4)	11.8	(0.2)
Utah	18.4	(0.9)	20.4	(1.0)	5.3 <sup>¶</sup>	(0.4)	7.4 <sup>¶</sup>	(0.2)
Alaska	18.1	(1.6)	18.1 <sup>¶</sup>	(2.1)	5.2 <sup>¶</sup>	(0.8)	8.2	(0.3)
Kentucky	17.9	(0.7)	19.6	(0.7)	6.0	(0.3)	9.0	(0.1)
Rhode Island	17.2	(1.3)	19.5	(1.5)	6.1	(0.6)	5.9	(0.2)
Florida	16.5	(0.3)	23.9	(0.5)	4.1	(0.2)	12.6	(0.1)
Oklahoma	15.8	(0.7)	17.5	(0.8)	8.1	(0.3)	9.2	(0.2)
Ohio	15.1	(0.4)	16.0	(0.4)	5.5	(0.2)	7.9	(0.1)
Louisiana	15.0	(0.6)	19.2	(0.8)	5.3 <sup>¶</sup>	(0.3)	6.8	(0.1)
Pennsylvania	15.1	(0.4)	15.6	(0.4)	4.1	(0.2)	8.0	(0.1)
Tennessee	14.8	(0.5)	17.2	(0.6)	4.9 <sup>¶</sup>	(0.2)	11.8	(0.1)
Washington	14.7	(0.5)	16.1	(0.6)	6.1	(0.2)	9.2	(0.1)
Colorado	14.6	(0.5)	15.0 <sup>¶</sup>	(0.6)	5.7 <sup>¶</sup>	(0.3)	6.3	(0.1)
Delaware	14.5	(1.3)	18.7	(1.8)	5.6 <sup>¶</sup>	(0.7)	10.2	(0.3)
Wyoming	14.4 <sup>¶</sup>	(1.8)	14.6 <sup>¶</sup>	(2.0)	3.9 <sup>¶</sup>	(0.9)	6.0	(0.3)
Montana	14.1 <sup>¶</sup>	(1.2)	13.7 <sup>¶</sup>	(1.3)	5.3 <sup>¶</sup>	(0.6)	8.4	(0.3)
Indiana	13.2	(0.5)	14.4 <sup>¶</sup>	(0.5)	5.7 <sup>¶</sup>	(0.2)	8.1	(0.1)
Alabama	13.1	(0.5)	17.6	(0.7)	5.1 <sup>¶</sup>	(0.3)	9.7	(0.1)
Arizona	13.1	(0.5)	17.1	(0.7)	6.0 <sup>¶</sup>	(0.2)	8.4	(0.1)
Arkansas	13.1 <sup>¶</sup>	(0.7)	15.6 <sup>¶</sup>	(0.9)	5.1 <sup>¶</sup>	(0.4)	8.7	(0.2)
Missouri	13.1	(0.5)	14.2 <sup>¶</sup>	(0.5)	4.4 <sup>¶</sup>	(0.2)	7.2 <sup>¶</sup>	(0.1)
North Carolina	12.9	(0.4)	17.1	(0.5)	5.0 <sup>¶</sup>	(0.2)	6.9	(0.1)
South Carolina	12.6 <sup>¶</sup>	(0.5)	16.7	(0.8)	4.7 <sup>¶</sup>	(0.3)	7.2 <sup>¶</sup>	(0.1)
Maine	12.3 <sup>¶</sup>	(1.0)	12.2	(1.0)	4.7 <sup>¶</sup>	(0.5)	9.8	(0.3)
Michigan	12.2 <sup>¶</sup>	(0.4)	13.0	(0.4)	5.7	(0.2)	8.1	(0.1)
Maryland	11.9 <sup>¶</sup>	(0.5)	15.3 <sup>¶</sup>	(0.7)	3.8	(0.2)	7.3 <sup>¶</sup>	(0.1)
Massachusetts	11.8 <sup>¶</sup>	(0.4)	12.9	(0.5)	5.3 <sup>¶</sup>	(0.2)	5.8	(0.1)
Oregon	11.7 <sup>¶</sup>	(0.6)	12.8	(0.6)	6.8	(0.3)	11.6	(0.2)
Vermont	10.9 <sup>¶</sup>	(1.4)	10.9	(1.4)	4.6 <sup>¶</sup>	(0.7)	8.1	(0.4)
Connecticut	10.8 <sup>¶</sup>	(0.6)	12.5	(0.7)	3.8	(0.3)	6.7	(0.1)
Mississippi	10.6	(0.6)	16.1 <sup>¶</sup>	(1.0)	4.7 <sup>¶</sup>	(0.3)	6.1	(0.1)
Illinois	10.5	(0.3)	11.7	(0.4)	4.1	(0.1)	3.7	(0.1)
Wisconsin	10.5	(0.4)	10.4	(0.5)	4.8 <sup>¶</sup>	(0.2)	6.5	(0.1)
California	10.4	(0.2)	16.1	(0.3)	4.8 <sup>¶</sup>	(0.1)	6.2	(0.0)
Idaho	9.7	(0.8)	10.7	(0.9)	5.8 <sup>¶</sup>	(0.4)	7.5 <sup>¶</sup>	(0.2)
Georgia	9.5 <sup>**</sup>	(0.3)	13.4 <sup>**</sup>	(0.5)	4.6 <sup>¶</sup>	(0.2)	6.5	(0.1)
District of Columbia	9.4 <sup>¶</sup>	(1.4)	— <sup>††</sup>	—	3.7	(0.7)	3.9	(0.3)
Hawaii	9.4	(0.9)	16.4 <sup>¶</sup>	(2.3)	5.1 <sup>¶</sup>	(0.4)	5.9	(0.2)
New Hampshire	9.3	(0.8)	9.5	(0.9)	5.9	(0.4)	8.1	(0.3)
Virginia	9.1	(0.3)	11.9	(0.5)	4.6 <sup>¶</sup>	(0.2)	5.6	(0.1)
Texas	8.6	(0.2)	13.2	(0.3)	4.6 <sup>¶</sup>	(0.1)	4.2	(0.0)
New York	8.4	(0.2)	10.0	(0.3)	4.4 <sup>¶</sup>	(0.1)	5.3	(0.1)
Kansas	8.0	(0.5)	8.6	(0.6)	5.0 <sup>¶</sup>	(0.3)	6.8 <sup>¶</sup>	(0.2)
New Jersey	8.0	(0.3)	10.5	(0.5)	3.8	(0.2)	6.0	(0.1)
North Dakota	7.6	(1.3)	7.5	(1.4)	3.9 <sup>¶</sup>	(0.6)	5.0	(0.3)
South Dakota	7.3	(1.1)	6.2	(1.1)	3.8	(0.6)	5.5	(0.3)
Minnesota	7.2	(0.4)	7.2	(0.4)	4.4 <sup>¶</sup>	(0.2)	4.2	(0.1)
Iowa	7.1	(0.5)	7.5	(0.5)	3.6	(0.3)	4.6	(0.1)
Nebraska	5.5	(0.6)	5.8	(0.7)	3.6	(0.3)	4.2	(0.2)

Abbreviation: SE = standard error.

\* Deaths per 100,000 population in 2008; age-adjusted to the 2000 U.S. standard population using the vintage 2008 population.

<sup>†</sup> Percentage of persons aged ≥12 years using OPR nonmedically during 2008–2009.

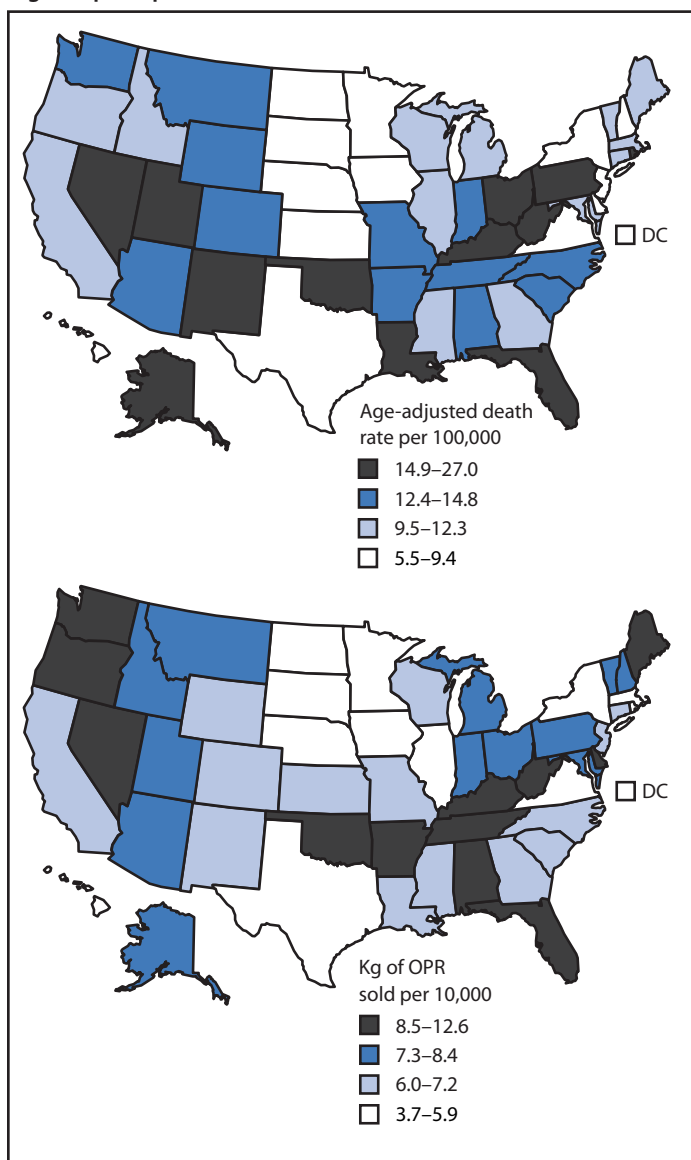
<sup>§</sup> Kilograms of OPR sold per 10,000 population in morphine equivalents in 2010.

<sup>¶</sup> Rate is not significantly different from the national rate.

\*\* Death rates from Georgia are based on preliminary numbers of deaths and might be underestimates.

†† The rate is not presented when the estimate is unstable because the number of deaths is less than 20.

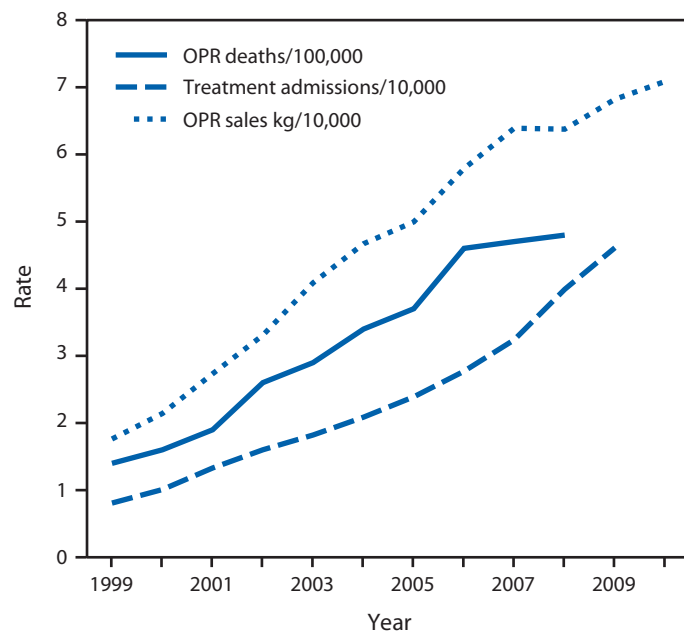
**FIGURE 1. Drug overdose death rate in 2008 and rate of kilograms (kg) of opioid pain relievers (OPR) sold in 2010 — United States**



without adequate evaluation or follow-up. Another possible contributor to state disparities is poverty, which was associated with greater increases in state death rates during 1999–2008. Medicaid populations are at greater risk of OPR overdose than non-Medicaid populations (6).

The findings in this report are subject to at least four limitations. First, vital statistics underestimate the rates of prescription and illicit drugs because the type of drug is not specified on many death certificates. Second, respondents might underreport nonmedical use of OPR in surveys such as the NSDUH. Third, ARCOS data reflect sales to retail outlets by state, but some drugs might have been used by nonstate residents or sent to other states by mail-order pharmacies or

**FIGURE 2. Rates\* of opioid pain reliever (OPR) overdose death, OPR treatment admissions, and kilograms of OPR sold — United States, 1999–2010**



\* Age-adjusted rates per 100,000 population for OPR deaths, crude rates per 10,000 population for OPR abuse treatment admissions, and crude rates per 10,000 population for kilograms of OPR sold.

otherwise not used by state residents. Finally, sales data did not include buprenorphine, an opioid primarily used for substance abuse treatment, though sometimes prescribed for pain. Its inclusion with drugs primarily used to treat pain would have inappropriately increased sales rates.

Public health interventions to reduce prescription drug overdose must strike a balance between reducing misuse and abuse and safeguarding legitimate access to treatment. To find this balance, health-care providers should only use OPR in carefully screened and monitored patients when non-OPR treatments have not been sufficient to treat pain, as recommended in evidence-based guidelines (21). States, as regulators of health-care practice, have the responsibility and authority to monitor and correct inappropriate and illegal prescribing. Data from state prescription drug monitoring programs, which collect records of prescription drugs prone to abuse from pharmacies, and Medicaid claims data can be used to identify and address OPR misuse and abuse. State Medicaid programs and other public insurers can use economic measures to hold providers accountable for their prescribing of OPR and other controlled prescription drugs. State professional licensing boards can take action against prescribers misusing their licenses, and law enforcement agencies can take action against illegal activities. State policies that focus on providers operating outside of normal medical practice, such as laws prohibiting so-called “pill mills,”

are a promising approach (19). All interventions need to be evaluated further and new interventions developed. Concerted attempts to address this problem, especially in states with high rates of OPR sales, nonmedical use, or overdose mortality, might help control the epidemic.

#### Reported by

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## Announcements

### National Epilepsy Awareness Month — November 2011

November is National Epilepsy Awareness Month. Epilepsy, which affects approximately 2 million persons in the United States, is characterized by recurrent, unprovoked seizures (1). Although epilepsy can occur at any age, the condition is more likely to begin among children aged <2 years and adults aged ≥65 years (1). Delayed recognition of seizures and subsequent inadequate treatment increases the risk for additional seizures, disability, decreased health-related quality of life, and, in rare instances, death (2–4). Analysis of Behavioral Risk Factor Surveillance System data from 19 states indicated that approximately 1% of adults have active epilepsy, and many might not be receiving the best available medical care (5). As do many persons who live with other chronic disorders, those with epilepsy often face challenges related to medication schedules, management of symptoms, disability, lifestyle limitations, emotional stress, and stigma (6).

The Managing Epilepsy Well (MEW) Network, established in 2007, is composed of persons interested in improving the care for persons with epilepsy (7). MEW Network members, including representatives from U.S. universities, community-based organizations, and CDC, are working together to develop and test self-management programs and tools that promote self-management and improve quality of life for persons with epilepsy.

MEW Network programs available to communities include Web Epilepsy Awareness Support and Education (WebEase), Using Practice and Learning to Increase Favorable Thoughts (UPLIFT), and the Program to Encourage Active Rewarding Lives (PEARLS). WebEase is an Internet self-management program to improve medication adherence, stress management, and sleep (7). UPLIFT is an Internet and telephone program that combines cognitive behavioral therapy with mindfulness to treat depression in persons with epilepsy (8). PEARLS is a home-based, collaborative-care depression treatment program for persons with epilepsy (9).

Interventions currently under development or evaluation by the MEW Network include a self management program that integrates self-management and social support for adults with refractory epilepsy, a decision-support system for clinics to enhance self-management behavior, a consumer-driven self-management program, and a telephone-based depression prevention program. Additional information about the MEW Network is available at <http://www.sph.emory.edu/managingepilepsywell> and <http://www.cdc.gov/epilepsy>.

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### National Chronic Obstructive Pulmonary Disease (COPD) Awareness Month — November 2011

Chronic obstructive pulmonary disease (COPD) characterizes a group of diseases that cause airflow obstruction, including emphysema and chronic bronchitis. In 2008, chronic lower respiratory diseases (primarily COPD) became the third leading cause of death in the United States (1).

November is National COPD Awareness Month. Sponsored by the U.S. COPD Coalition, the observance is an opportunity for health professionals, health-care providers, and COPD patient groups to collaborate and improve awareness and treatment of COPD by participating in the National Heart, Lung, and Blood Institute’s COPD Learn More, Breathe Better campaign. In addition, CDC and its partners recently have released a set of goals to define the unique role and contributions of public health in the prevention and control of COPD (2).

The most significant cause of COPD is tobacco smoke. Smokers should be encouraged to quit, and persons should be protected from exposure to secondhand smoke. Smoking cessation information is available at <http://www.smokefree.gov> and [http://www.cdc.gov/tobacco/quit\\_smoking](http://www.cdc.gov/tobacco/quit_smoking). Exposures to certain chemicals, fumes or vapors, or air pollution also are risks factors, as are asthma and respiratory infections.

Although no cure for COPD is available, it is treatable, and early detection is essential. Persons at risk for COPD who experience chronic cough, shortness of breath, and sputum

## Announcements

production are encouraged to talk to their health-care provider and request a simple breathing test called spirometry to assess lung function. Additional information is available from CDC (<http://www.cdc.gov/copd>), the National Heart, Lung, and Blood Institute (<http://www.nhlbi.nih.gov/health/public/lung/copd/lmbb-campaign>), and the U.S. COPD Coalition (<http://www.uscopdcoalition.org>).

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### Reinstatement of Notification Requirements for Emergency Response Employees Potentially Exposed to Life-Threatening Infectious Diseases

In October 2009, Congress reauthorized the Ryan White HIV/AIDS Treatment Extension Act of 2009 and included Part G, which reinstated notification requirements for emergency response employees potentially exposed to life-threatening infectious diseases.\* On July 7, 2010, the Secretary of the U.S. Department of Health and Human Services delegated to CDC responsibility for compiling a list of such diseases, including emerging infectious diseases, and specifying those diseases usually transmitted through airborne or aerosolized means. The Secretary further delegated the updating of guidelines for determining circumstances under which emergency response employees might be exposed to such diseases while attending to or transporting victims of emergencies and guidelines for medical facilities making determinations whether such exposures have occurred.

CDC staff members developed the required list and guidelines, incorporating input received via a public comment process† during December 2010–February 2011. On November 2, 2011, CDC published a final notice in the Federal Register, detailing responses to the public comments and setting forth the final list of diseases and the final guidelines, which will become effective 30 days after publication.§

\* Additional information available at <http://edocket.access.gpo.gov/2010/2010-31149.htm>.

† Additional information available at <http://edocket.access.gpo.gov/2010/pdf/C1-2010-31110.pdf>.

§ Available at <http://www.gpo.gov/fdsys/pkg/FR-2011-11-02/pdf/2011-28234.pdf>.

### Epi Info 7 Software Released

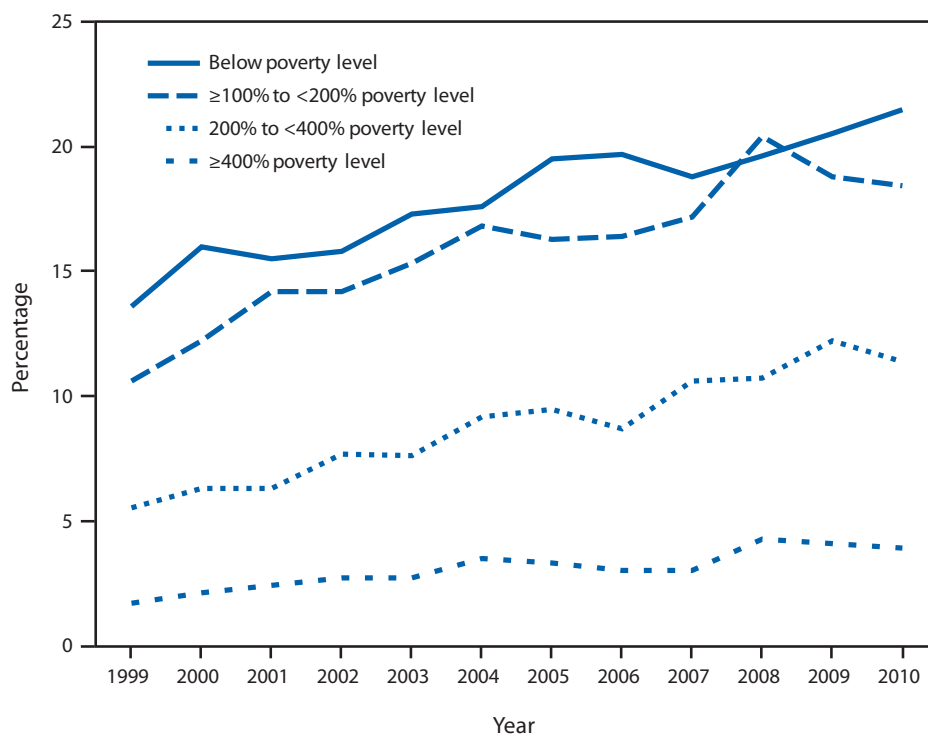
CDC has released Epi Info 7 (available at <http://www.cdc.gov/epiinfo>), the latest version of its public-domain software designed to enable epidemiologists to create complex forms rapidly, collect large amounts of data, and quickly analyze information to assess situations. With Epi Info 7, users will be able to 1) distribute, deploy, and use Epi Info 7 during emergencies without requiring administrative privileges; 2) rapidly create complex questionnaires by dragging and dropping templates; 3) store data either on a server, when network infrastructure is available, or in local database files when disasters disrupt network connectivity; 4) link records together to assess relationships; and 5) visualize data on case-based cluster maps, social network analysis graphs, and a new visual dashboard.

Epi Info 7 also will enable future additions of web-based and mobile device–based extensions to the Epi Info platform.

## QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

### Percentage of Adults Aged 18–64 Years Who Did Not Get Needed Prescription Drugs Because of Cost,\* by Poverty Status<sup>†</sup> — National Health Interview Survey, United States, 1999–2010<sup>§</sup>



\* Based on response to the question, "During the past 12 months, was there any time when you needed prescription medicine but didn't get it because you couldn't afford it?"

<sup>†</sup> Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds. Family income was imputed when information was missing, using multiple imputation methodology.

<sup>§</sup> Estimates are based on household interviews of a sample of the U.S. civilian, noninstitutionalized adult population.

During 1999–2010, the percentage of working-age adults who reported that in the past 12 months they needed prescription drugs but did not obtain them because of cost was higher among those in families with low income than in families with higher income. The percentage that reported not getting needed prescription drugs increased for all income groups during the period 1999–2010. In 2010, 21.5% of those below the poverty level did not obtain needed prescription drugs compared with 3.9% among those at or exceeding 400% of the poverty level.

Source: National Health Interview Survey data, 1999–2010. Available at <http://www.cdc.gov/nchs/nhis.htm>.

## Notifiable Diseases and Mortality Tables

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending October 29, 2011 (43rd week)\*

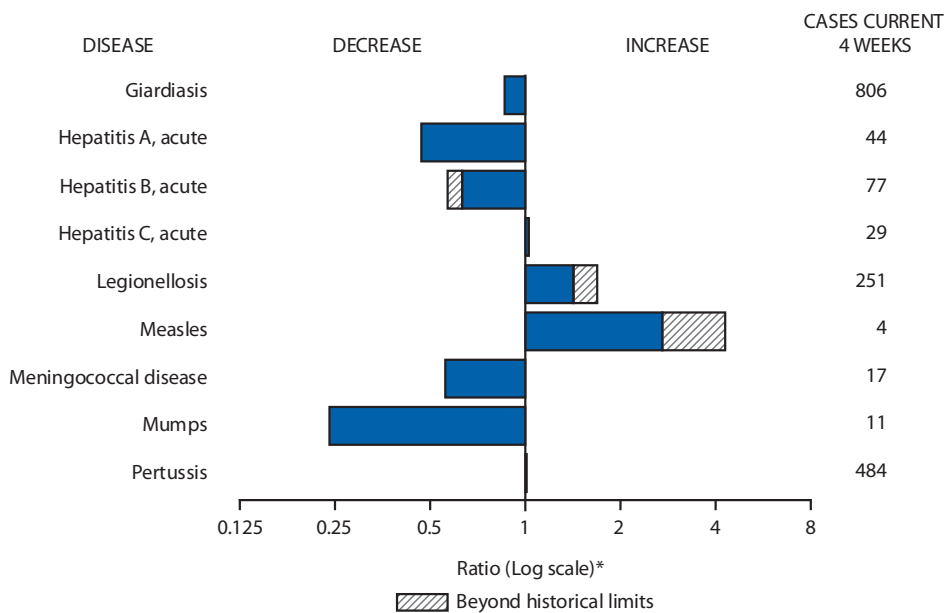
Disease	Current week	Cum 2011	5-year weekly average <sup>†</sup>	Total cases reported for previous years					States reporting cases during current week (No.)
				2010	2009	2008	2007	2006	
Anthrax	—	—	—	—	1	—	1	1	
Arboviral diseases <sup>§, ¶</sup> :									
California serogroup virus disease	—	106	1	75	55	62	55	67	
Eastern equine encephalitis virus disease	—	3	—	10	4	4	4	8	
Powassan virus disease	—	13	0	8	6	2	7	1	
St. Louis encephalitis virus disease	—	3	0	10	12	13	9	10	
Western equine encephalitis virus disease	—	—	—	—	—	—	—	—	
Babesiosis	3	579	0	NN	NN	NN	NN	NN	NY (3)
Botulism, total	19	101	2	112	118	145	144	165	
foodborne	—	8	0	7	10	17	32	20	
infant	—	65	1	80	83	109	85	97	
other (wound and unspecified)	19	28	0	25	25	19	27	48	CA (19)
Brucellosis	—	65	2	115	115	80	131	121	
Chancroid	1	27	1	24	28	25	23	33	VA (1)
Cholera	—	28	0	13	10	5	7	9	
Cyclosporiasis <sup>§</sup>	1	140	2	179	141	139	93	137	FL (1)
Diphtheria	—	—	—	—	—	—	—	—	
<i>Haemophilus influenzae</i> ,** invasive disease (age <5 yrs):									
serotype b	—	6	0	23	35	30	22	29	
nonsensory type b	—	88	3	200	236	244	199	175	
unknown serotype	1	192	3	223	178	163	180	179	OK (1)
Hansen disease <sup>§</sup>	—	39	2	98	103	80	101	66	
Hantavirus pulmonary syndrome <sup>§</sup>	—	18	0	20	20	18	32	40	
Hemolytic uremic syndrome, postdiarrheal <sup>§</sup>	3	150	6	266	242	330	292	288	OR (1), CA (2)
Influenza-associated pediatric mortality <sup>§, ††</sup>	—	112	4	61	358	90	77	43	
Listeriosis	11	606	17	821	851	759	808	884	NY (4), MI (1), WA (1), OR (1), CA (4)
Measles <sup>§§</sup>	3	205	0	63	71	140	43	55	NC (1), AZ (1), OR (1)
Meningococcal disease, invasive <sup>¶¶</sup> :									
A, C, Y, and W-135	1	152	5	280	301	330	325	318	OK (1)
serogroup B	1	77	2	135	174	188	167	193	VA (1)
other serogroup	—	10	1	12	23	38	35	32	
unknown serogroup	1	327	8	406	482	616	550	651	OR (1)
Novel influenza A virus infections <sup>***</sup>	—	7	0	4	43,774	2	4	NN	
Plague	—	2	0	2	8	3	7	17	
Poliomyelitis, paralytic	—	—	—	—	1	—	—	—	
Polio virus Infection, nonparalytic <sup>§</sup>	—	—	—	—	—	—	—	NN	
Psittacosis <sup>§</sup>	—	2	0	4	9	8	12	21	
Q fever, total <sup>§</sup>	1	88	3	131	113	120	171	169	
acute	—	65	1	106	93	106	—	—	
chronic	1	23	0	25	20	14	—	—	ME (1)
Rabies, human	—	1	0	2	4	2	1	3	
Rubella <sup>†††</sup>	—	3	0	5	3	16	12	11	
Rubella, congenital syndrome	—	—	—	—	2	—	—	1	
SARS-CoV <sup>§</sup>	—	—	—	—	—	—	—	—	
Smallpox <sup>§</sup>	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome <sup>§</sup>	—	92	2	142	161	157	132	125	
Syphilis, congenital (age <1 yr) <sup>§§§</sup>	—	182	7	377	423	431	430	349	
Tetanus	—	7	1	26	18	19	28	41	
Toxic-shock syndrome (staphylococcal) <sup>§</sup>	1	63	2	82	74	71	92	101	NC (1)
Trichinellosis	—	9	—	7	13	39	5	15	
Tularemia	2	117	1	124	93	123	137	95	WA (2)
Typhoid fever	2	298	7	467	397	449	434	353	CA (2)
Vancomycin-intermediate <i>Staphylococcus aureus</i> <sup>§</sup>	1	52	1	91	78	63	37	6	MO (1)
Vancomycin-resistant <i>Staphylococcus aureus</i> <sup>§</sup>	—	—	0	2	1	—	2	1	
Vibriosis (noncholera <i>Vibrio</i> species infections) <sup>§</sup>	13	598	12	846	789	588	549	NN	PA (1), OH (1), MD (2), FL (3), AL (1), AZ (2), NV (1), CA (2)
Viral hemorrhagic fever <sup>¶¶¶</sup>	—	—	—	1	NN	NN	NN	NN	
Yellow fever	—	—	—	—	—	—	—	—	

See Table 1 footnotes on next page.

**TABLE I. (Continued) Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending October 29, 2011 (43rd week)\***

—: No reported cases. N: Not reportable. NN: Not Nationally Notifiable. Cum: Cumulative year-to-date counts.  
 \* Case counts for reporting year 2011 are provisional and subject to change. For further information on interpretation of these data, see [http://www.cdc.gov/osels/ph\\_surveillance/nndss/phs/files/ProvisionalNationa%20NotifiableDiseasesSurveillanceData20100927.pdf](http://www.cdc.gov/osels/ph_surveillance/nndss/phs/files/ProvisionalNationa%20NotifiableDiseasesSurveillanceData20100927.pdf).  
 † 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/osels/ph\\_surveillance/nndss/phs/files/5yearweeklyaverage.pdf](http://www.cdc.gov/osels/ph_surveillance/nndss/phs/files/5yearweeklyaverage.pdf).  
 ‡ Not reportable in all states. Data from states where the condition is not reportable are excluded from this table except starting in 2007 for the arboviral diseases, STD data, TB data, and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at [http://www.cdc.gov/osels/ph\\_surveillance/nndss/phs/infdis.htm](http://www.cdc.gov/osels/ph_surveillance/nndss/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 weekly from reports to the Influenza Division, National Center for Immunization and Respiratory Diseases. Since October 2, 2011, no influenza-associated pediatric deaths occurring during the 2011-12 influenza season have been reported.  
 ‡‡ The three measles cases reported for the current week were imported.  
 ¶¶ Data for meningococcal disease (all serogroups) are available in Table II.  
 \*\*\* CDC discontinued reporting of individual confirmed and probable cases of 2009 pandemic influenza A (H1N1) virus infections on July 24, 2009. During 2009, four cases of human infection with novel influenza A viruses, different from the 2009 pandemic influenza A (H1N1) strain, were reported to CDC. The four cases of novel influenza A virus infection reported to CDC during 2010, and the seven cases reported during 2011, were identified as swine influenza A (H3N2) virus and are unrelated to the 2009 pandemic influenza A (H1N1) virus. Total case counts are provided by the Influenza Division, National Center for Immunization and Respiratory Diseases (NCIRD).  
 ††† No rubella cases were reported for the current week.  
 †††† Updated weekly from reports to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention.  
 ¶¶¶ There was one case of viral hemorrhagic fever reported during week 12 of 2010. The one case report was confirmed as lassa fever. See Table II for dengue hemorrhagic fever.

**FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals October 29, 2011, with historical data**



\* 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**

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TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending October 29, 2011, and October 30, 2010 (43rd week)\*

Reporting area	Dengue Virus Infection†									
	Dengue Fever§					Dengue Hemorrhagic Fever¶				
	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Current week	Previous 52 weeks		Cum 2011	Cum 2010
	Med	Max				Med	Max			
<b>United States</b>	—	3	16	162	646	—	0	1	1	9
<b>New England</b>	—	0	1	1	9	—	0	0	—	—
Connecticut	—	0	0	—	—	—	0	0	—	—
Maine**	—	0	1	—	5	—	0	0	—	—
Massachusetts	—	0	0	—	—	—	0	0	—	—
New Hampshire	—	0	0	—	—	—	0	0	—	—
Rhode Island**	—	0	0	—	1	—	0	0	—	—
Vermont**	—	0	1	1	3	—	0	0	—	—
<b>Mid. Atlantic</b>	—	1	6	50	214	—	0	0	—	5
New Jersey	—	0	1	—	28	—	0	0	—	—
New York (Upstate)	—	0	1	—	30	—	0	0	—	2
New York City	—	1	4	36	135	—	0	0	—	3
Pennsylvania	—	0	2	14	21	—	0	0	—	—
<b>E.N. Central</b>	—	0	4	9	65	—	0	0	—	1
Illinois	—	0	2	1	20	—	0	0	—	—
Indiana	—	0	1	2	14	—	0	0	—	—
Michigan	—	0	1	2	9	—	0	0	—	—
Ohio	—	0	1	2	16	—	0	0	—	—
Wisconsin	—	0	2	2	6	—	0	0	—	1
<b>W.N. Central</b>	—	0	2	6	31	—	0	1	—	—
Iowa	—	0	1	3	2	—	0	0	—	—
Kansas	—	0	1	1	4	—	0	0	—	—
Minnesota	—	0	1	—	13	—	0	0	—	—
Missouri	—	0	1	1	4	—	0	0	—	—
Nebraska**	—	0	0	—	7	—	0	0	—	—
North Dakota	—	0	1	1	1	—	0	0	—	—
South Dakota	—	0	0	—	—	—	0	1	—	—
<b>S. Atlantic</b>	—	1	8	67	226	—	0	1	1	2
Delaware	—	0	2	2	—	—	0	0	—	—
District of Columbia	—	0	0	—	—	—	0	0	—	—
Florida	—	1	7	49	178	—	0	0	—	2
Georgia	—	0	1	3	11	—	0	0	—	—
Maryland**	—	0	2	4	—	—	0	0	—	—
North Carolina	—	0	1	2	8	—	0	0	—	—
South Carolina**	—	0	0	—	13	—	0	0	—	—
Virginia**	—	0	1	7	14	—	0	1	1	—
West Virginia	—	0	0	—	2	—	0	0	—	—
<b>E.S. Central</b>	—	0	3	4	6	—	0	0	—	—
Alabama**	—	0	1	2	3	—	0	0	—	—
Kentucky	—	0	0	—	2	—	0	0	—	—
Mississippi	—	0	0	—	—	—	0	0	—	—
Tennessee**	—	0	2	2	1	—	0	0	—	—
<b>W.S. Central</b>	—	0	2	6	25	—	0	0	—	1
Arkansas**	—	0	0	—	—	—	0	0	—	1
Louisiana	—	0	1	3	4	—	0	0	—	—
Oklahoma	—	0	1	—	4	—	0	0	—	—
Texas**	—	0	1	3	17	—	0	0	—	—
<b>Mountain</b>	—	0	2	4	20	—	0	0	—	—
Arizona	—	0	2	2	10	—	0	0	—	—
Colorado	—	0	0	—	—	—	0	0	—	—
Idaho**	—	0	1	—	2	—	0	0	—	—
Montana**	—	0	1	—	3	—	0	0	—	—
Nevada**	—	0	1	1	4	—	0	0	—	—
New Mexico**	—	0	0	—	1	—	0	0	—	—
Utah	—	0	1	1	—	—	0	0	—	—
Wyoming**	—	0	0	—	—	—	0	0	—	—
<b>Pacific</b>	—	0	4	15	50	—	0	0	—	—
Alaska	—	0	0	—	1	—	0	0	—	—
California	—	0	2	5	34	—	0	0	—	—
Hawaii	—	0	4	5	—	—	0	0	—	—
Oregon	—	0	0	—	—	—	0	0	—	—
Washington	—	0	1	5	15	—	0	0	—	—
<b>Territories</b>										
American Samoa	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	29	192	1,060	10,029	—	0	3	17	227
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

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

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

\* Case counts for reporting year 2011 are provisional and subject to change. For further information on interpretation of these data, see [http://www.cdc.gov/osels/ph\\_surveillance/nndss/phps/files/ProvisionalNationa%20NotifiableDiseasesSurveillanceData20100927.pdf](http://www.cdc.gov/osels/ph_surveillance/nndss/phps/files/ProvisionalNationa%20NotifiableDiseasesSurveillanceData20100927.pdf). Data for TB are displayed in Table IV, which appears quarterly.

† Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance).

§ Dengue Fever includes cases that meet criteria for Dengue Fever with hemorrhage, other clinical and unknown case classifications.

¶ DHF includes cases that meet criteria for dengue shock syndrome (DSS), a more severe form of DHF.

\*\* Contains data reported through the National Electronic Disease Surveillance System (NEDSS).







## Morbidity and Mortality Weekly Report

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending October 29, 2011, and October 30, 2010 (43rd week)\*

Reporting area	Hepatitis (viral, acute), by type														
	A				B					C					
	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Current week	Previous 52 weeks		Cum 2011	Cum 2010
	Med	Max				Med	Max				Med	Max			
<b>United States</b>	10	22	74	950	1,349	23	47	167	1,996	2,721	4	18	39	821	677
<b>New England</b>	—	1	5	56	85	—	1	8	62	49	—	1	5	44	48
Connecticut	—	0	3	16	24	—	0	4	10	20	—	0	3	25	33
Maine†	—	0	2	6	7	—	0	2	8	13	—	0	2	4	2
Massachusetts	—	0	3	25	44	—	1	6	42	9	—	0	2	11	12
New Hampshire	—	0	1	—	1	—	0	1	2	5	N	0	0	N	N
Rhode Island†	—	0	1	3	9	U	0	0	U	U	U	0	0	U	U
Vermont†	—	0	2	6	—	—	0	0	—	2	—	0	1	4	1
<b>Mid. Atlantic</b>	1	4	10	176	232	2	5	12	230	241	1	1	6	74	84
New Jersey	—	1	4	28	68	—	1	4	52	67	—	0	4	1	18
New York (Upstate)	1	1	4	42	51	—	1	9	41	39	1	1	4	42	40
New York City	—	1	6	58	68	—	1	5	65	72	—	0	2	2	3
Pennsylvania	—	1	3	48	45	2	2	4	72	63	—	0	4	29	23
<b>E.N. Central</b>	—	4	8	159	180	1	6	37	279	412	—	3	12	157	77
Illinois	—	1	4	48	44	—	1	6	54	108	—	0	2	6	1
Indiana	—	0	3	12	11	—	1	3	48	63	—	1	5	53	24
Michigan	—	1	6	60	65	—	1	6	69	106	—	2	7	92	36
Ohio	—	1	3	34	42	1	1	30	85	87	—	0	1	5	8
Wisconsin	—	0	2	5	18	—	0	3	23	48	—	0	1	1	8
<b>W.N. Central</b>	—	1	25	34	66	1	2	16	110	100	—	0	6	8	15
Iowa	—	0	1	5	10	—	0	1	9	13	—	0	0	—	—
Kansas	—	0	2	3	10	—	0	2	10	8	—	0	1	3	2
Minnesota	—	0	22	9	14	—	0	15	9	7	—	0	6	2	6
Missouri	—	0	1	10	17	1	2	5	69	59	—	0	1	—	5
Nebraska†	—	0	1	5	14	—	0	3	12	11	—	0	1	3	2
North Dakota	—	0	3	—	—	—	0	0	—	—	—	0	0	—	—
South Dakota	—	0	2	2	1	—	0	1	1	2	—	0	0	—	—
<b>S. Atlantic</b>	3	5	13	190	283	6	12	55	541	748	2	4	11	198	154
Delaware	—	0	1	2	7	—	0	2	11	24	U	0	0	U	U
District of Columbia	—	0	0	—	1	—	0	0	—	3	—	0	0	—	2
Florida	1	1	6	66	114	5	4	8	171	246	1	1	4	51	46
Georgia	—	1	4	38	34	—	2	8	78	140	—	1	3	31	24
Maryland†	2	0	4	23	18	—	1	4	44	57	—	0	3	29	20
North Carolina	—	0	3	23	43	1	2	12	94	87	1	1	7	48	33
South Carolina†	—	0	2	9	22	—	1	4	27	53	—	0	1	1	1
Virginia†	—	1	3	21	42	—	1	7	50	78	—	0	3	16	11
West Virginia	—	0	5	8	2	—	0	43	66	60	—	0	6	22	17
<b>E.S. Central</b>	—	1	6	42	33	4	9	14	351	305	—	3	8	149	132
Alabama†	—	0	2	6	6	1	2	5	92	59	—	0	3	16	6
Kentucky	—	0	6	9	13	2	2	6	84	109	—	1	7	64	89
Mississippi	—	0	1	7	2	—	1	3	37	29	U	0	0	U	U
Tennessee†	—	0	5	20	12	1	4	8	138	108	—	1	5	69	37
<b>W.S. Central</b>	4	3	15	108	121	6	7	67	255	484	—	2	11	75	59
Arkansas†	—	0	0	—	2	—	1	4	41	51	—	0	0	—	1
Louisiana	—	0	1	2	10	—	1	4	27	45	—	0	2	5	2
Oklahoma	—	0	4	3	2	2	1	16	69	82	—	1	10	40	25
Texas†	4	2	11	103	107	4	3	45	118	306	—	0	3	30	31
<b>Mountain</b>	—	1	5	52	130	—	1	4	61	117	1	1	4	49	53
Arizona	—	0	2	14	57	—	0	3	13	22	U	0	0	U	U
Colorado	—	0	2	17	34	—	0	2	15	39	1	0	3	15	14
Idaho†	—	0	1	6	6	—	0	1	2	6	—	0	2	8	9
Montana†	—	0	1	2	4	—	0	0	—	—	—	0	1	2	2
Nevada†	—	0	3	5	13	—	0	3	20	35	—	0	2	9	5
New Mexico†	—	0	1	5	4	—	0	2	6	5	—	0	1	12	13
Utah	—	0	2	1	9	—	0	1	5	8	—	0	1	1	10
Wyoming†	—	0	1	2	3	—	0	1	—	2	—	0	1	2	—
<b>Pacific</b>	2	3	13	133	219	3	3	25	107	265	—	1	12	67	55
Alaska	—	0	1	2	1	—	0	1	4	3	U	0	0	U	U
California	1	2	12	95	179	—	1	22	49	182	—	1	4	29	23
Hawaii	—	0	2	7	7	—	0	1	6	6	U	0	0	U	U
Oregon	—	0	2	8	16	1	0	4	28	35	—	0	3	11	14
Washington	1	0	4	21	16	2	0	4	20	39	—	0	5	27	18
<b>Territories</b>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
American Samoa	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	5	8	4	—	1	8	28	68	—	0	4	10	56
Puerto Rico	—	0	2	6	15	—	0	2	8	24	N	0	0	N	N
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

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† Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending October 29, 2011, and October 30, 2010 (43rd week)\*

Reporting area	Legionellosis					Lyme disease					Malaria				
	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Current week	Previous 52 weeks		Cum 2011	Cum 2010
		Med	Max				Med	Max				Med	Max		
<b>United States</b>	51	54	167	3,066	2,835	358	361	1,904	26,464	27,427	17	26	114	1,115	1,441
<b>New England</b>	—	4	42	303	235	3	73	447	5,492	8,228	2	2	20	78	93
Connecticut	—	1	10	64	41	1	29	223	2,282	2,792	—	0	20	10	2
Maine†	—	0	2	15	11	—	13	66	775	621	2	0	1	6	5
Massachusetts	—	2	27	181	116	—	21	72	1,082	3,118	—	1	5	51	67
New Hampshire	—	0	3	18	22	—	9	65	705	1,205	—	0	1	2	4
Rhode Island†	—	0	2	14	36	—	1	31	113	169	—	0	4	3	12
Vermont†	—	0	2	11	9	2	5	66	535	323	—	0	1	6	3
<b>Mid. Atlantic</b>	18	15	79	1,044	803	304	154	1,201	16,608	9,788	2	7	17	253	438
New Jersey	—	2	14	155	128	86	58	586	7,111	3,370	—	0	6	8	90
New York (Upstate)	11	5	27	317	250	102	35	214	3,183	2,291	2	1	4	43	66
New York City	—	3	13	170	145	—	1	17	100	648	—	3	10	153	231
Pennsylvania	7	5	35	402	280	116	65	500	6,214	3,479	—	1	4	49	51
<b>E.N. Central</b>	14	10	51	651	610	—	17	106	1,163	3,657	2	3	8	131	143
Illinois	—	1	11	96	137	—	1	18	144	134	—	1	4	50	53
Indiana	3	1	5	82	54	—	0	15	89	78	—	0	2	9	13
Michigan	2	3	15	163	159	—	1	14	102	92	—	0	4	29	28
Ohio	9	4	34	309	202	—	1	9	43	26	2	1	4	37	37
Wisconsin	—	0	2	1	58	—	13	66	785	3,327	—	0	2	6	12
<b>W.N. Central</b>	—	1	9	71	105	1	2	15	120	2,024	—	1	45	28	62
Iowa	—	0	2	10	14	—	0	11	76	84	—	0	3	18	12
Kansas	—	0	2	9	11	—	0	2	12	10	—	0	2	6	10
Minnesota	—	0	8	—	27	—	0	15	—	1,899	—	0	45	—	3
Missouri	—	1	5	43	32	—	0	0	—	4	—	0	1	—	19
Nebraska†	—	0	1	5	9	—	0	2	8	8	—	0	1	3	15
North Dakota	—	0	1	2	4	1	0	10	21	18	—	0	1	—	—
South Dakota	—	0	1	2	8	—	0	1	3	1	—	0	1	1	3
<b>S. Atlantic</b>	15	9	29	447	459	43	52	169	2,882	3,401	5	8	23	374	383
Delaware	—	0	4	19	15	3	12	47	723	574	—	0	3	7	2
District of Columbia	—	0	3	9	16	—	0	2	13	38	—	0	1	5	11
Florida	4	3	9	144	140	6	2	7	98	75	—	2	7	88	109
Georgia	—	1	3	31	56	—	0	5	23	10	1	1	5	68	62
Maryland†	11	1	14	101	100	12	17	112	1,051	1,496	4	2	13	103	86
North Carolina	—	1	7	57	53	—	0	8	54	71	—	0	6	34	47
South Carolina†	—	0	5	17	12	—	0	6	29	27	—	0	1	4	5
Virginia†	—	1	9	63	56	22	15	76	818	999	—	1	8	65	58
West Virginia	—	0	2	6	11	—	0	14	73	111	—	0	0	—	3
<b>E.S. Central</b>	1	2	10	134	120	—	1	5	47	42	2	0	4	29	28
Alabama†	—	0	2	22	17	—	0	2	14	2	—	0	3	6	8
Kentucky	—	0	3	31	26	—	0	1	1	5	—	0	1	7	6
Mississippi	—	0	3	13	12	—	0	1	3	—	—	0	1	1	2
Tennessee†	1	1	8	68	65	—	0	3	29	35	2	0	3	15	12
<b>W.S. Central</b>	—	3	13	110	145	—	1	29	33	97	—	1	18	28	87
Arkansas†	—	0	2	12	16	—	0	0	—	—	—	0	1	5	4
Louisiana	—	0	3	14	9	—	0	1	1	3	—	0	1	1	5
Oklahoma	—	0	3	9	12	—	0	0	—	—	—	0	1	5	5
Texas†	—	2	11	75	108	—	1	29	32	94	—	0	17	17	73
<b>Mountain</b>	—	2	5	82	149	1	0	4	35	26	—	1	4	54	58
Arizona	—	1	3	28	55	—	0	2	11	2	—	0	4	22	23
Colorado	—	0	2	5	29	—	0	1	1	3	—	0	3	18	20
Idaho†	—	0	1	6	5	1	0	2	4	8	—	0	1	2	3
Montana†	—	0	1	1	4	—	0	3	9	4	—	0	1	1	2
Nevada†	—	0	2	13	19	—	0	1	3	1	—	0	2	7	6
New Mexico†	—	0	2	10	7	—	0	2	5	5	—	0	1	3	1
Utah	—	0	2	15	23	—	0	1	1	3	—	0	1	1	3
Wyoming†	—	0	2	4	7	—	0	1	1	—	—	0	0	—	—
<b>Pacific</b>	3	5	21	224	209	6	2	11	84	164	4	3	11	140	149
Alaska	—	0	0	—	2	—	0	2	7	6	—	0	2	5	3
California	3	4	15	188	175	—	1	9	54	107	3	2	8	96	99
Hawaii	—	0	1	1	1	N	0	0	N	N	—	0	1	6	3
Oregon	—	0	3	16	12	—	0	2	11	38	—	0	4	14	13
Washington	—	0	6	19	19	6	0	4	12	13	1	0	3	19	31
<b>Territories</b>															
American Samoa	N	0	0	N	N	N	0	0	N	N	—	0	1	1	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	1	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	1	—	1	N	0	0	N	N	—	0	0	—	5
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

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† Contains data reported through the National Electronic Disease Surveillance System (NEDSS).









TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending October 29, 2011, and October 30, 2010 (43rd week)\*

Reporting area	Varicella (chickenpox)					West Nile virus disease <sup>†</sup>									
	Current week	Previous 52 weeks		Cum 2011	Cum 2010	Neuroinvasive					Nonneuroinvasive <sup>§</sup>				
		Med	Max			Current week	Previous 52 weeks Med	Max	Cum 2011	Cum 2010	Current week	Previous 52 weeks Med	Max	Cum 2011	Cum 2010
United States	208	271	367	10,506	12,787	—	0	54	392	622	—	0	24	187	391
New England	10	21	50	971	979	—	0	3	14	14	—	0	1	2	5
Connecticut	9	5	16	225	288	—	0	2	8	7	—	0	1	1	4
Maine <sup>¶</sup>	—	4	10	170	201	—	0	0	—	—	—	0	0	—	—
Massachusetts	—	7	18	355	231	—	0	2	4	6	—	0	1	1	1
New Hampshire	—	2	9	102	131	—	0	0	—	1	—	0	0	—	—
Rhode Island <sup>¶</sup>	—	0	6	33	39	—	0	1	1	—	—	0	0	—	—
Vermont <sup>¶</sup>	1	2	10	86	89	—	0	1	1	—	—	0	0	—	—
Mid. Atlantic	32	44	76	2,007	1,415	—	0	11	32	123	—	0	6	20	63
New Jersey	7	15	68	1,194	496	—	0	1	2	15	—	0	1	3	15
New York (Upstate)	N	0	0	N	N	—	0	5	17	56	—	0	4	14	30
New York City	—	0	0	—	—	—	0	4	9	33	—	0	1	2	9
Pennsylvania	25	19	41	813	919	—	0	1	4	19	—	0	1	1	9
E.N. Central	55	65	118	2,376	4,092	—	0	13	68	80	—	0	6	26	30
Illinois	—	15	31	605	1,041	—	0	6	20	45	—	0	3	10	16
Indiana <sup>¶</sup>	14	5	18	214	308	—	0	2	6	6	—	0	1	3	7
Michigan	15	18	38	742	1,199	—	0	7	32	25	—	0	1	1	4
Ohio	26	21	58	814	1,118	—	0	3	9	4	—	0	3	11	1
Wisconsin	—	0	22	1	426	—	0	1	1	—	—	0	1	1	2
W.N. Central	—	7	42	323	792	—	0	8	28	32	—	0	6	27	75
Iowa	N	0	0	N	N	—	0	2	5	5	—	0	2	4	4
Kansas <sup>¶</sup>	—	2	15	85	316	—	0	1	4	4	—	0	0	—	15
Minnesota	—	0	0	—	—	—	0	1	1	4	—	0	1	1	4
Missouri	—	4	24	167	371	—	0	1	4	3	—	0	1	3	—
Nebraska <sup>¶</sup>	—	0	4	5	21	—	0	4	13	10	—	0	3	14	29
North Dakota	—	0	10	36	39	—	0	1	1	2	—	0	1	3	7
South Dakota	—	1	4	30	45	—	0	0	—	4	—	0	1	2	16
S. Atlantic	21	31	64	1,422	1,840	—	0	9	49	38	—	0	4	17	22
Delaware <sup>¶</sup>	—	0	3	6	32	—	0	1	1	—	—	0	0	—	—
District of Columbia	—	0	2	12	18	—	0	1	1	3	—	0	0	—	3
Florida <sup>¶</sup>	16	16	38	721	856	—	0	5	19	9	—	0	2	2	3
Georgia	N	0	0	N	N	—	0	2	7	4	—	0	1	5	9
Maryland <sup>¶</sup>	N	0	0	N	N	—	0	5	10	17	—	0	3	10	6
North Carolina	N	0	0	N	N	—	0	1	2	—	—	0	0	—	—
South Carolina <sup>¶</sup>	—	0	9	12	75	—	0	0	—	1	—	0	0	—	—
Virginia <sup>¶</sup>	5	7	25	359	476	—	0	2	8	4	—	0	0	—	1
West Virginia	—	5	32	312	383	—	0	1	1	—	—	0	0	—	—
E.S. Central	4	5	15	222	261	—	0	8	45	8	—	0	5	25	10
Alabama <sup>¶</sup>	4	4	14	210	253	—	0	1	3	1	—	0	0	—	2
Kentucky	N	0	0	N	N	—	0	1	2	2	—	0	1	1	1
Mississippi	—	0	3	12	8	—	0	4	26	3	—	0	4	22	5
Tennessee <sup>¶</sup>	N	0	0	N	N	—	0	3	14	2	—	0	1	2	2
W.S. Central	54	44	258	2,148	2,408	—	0	3	13	101	—	0	2	7	19
Arkansas <sup>¶</sup>	—	4	20	245	164	—	0	1	1	6	—	0	0	—	1
Louisiana	—	1	6	68	72	—	0	2	6	18	—	0	2	4	7
Oklahoma	N	0	0	N	N	—	0	1	—	—	—	0	0	—	—
Texas <sup>¶</sup>	54	41	247	1,835	2,172	—	0	2	6	77	—	0	1	3	11
Mountain	32	18	65	944	902	—	0	9	53	155	—	0	4	24	127
Arizona	4	4	50	409	—	—	0	6	31	105	—	0	2	10	60
Colorado <sup>¶</sup>	27	4	31	211	347	—	0	2	2	26	—	0	2	5	55
Idaho <sup>¶</sup>	N	0	0	N	N	—	0	1	1	—	—	0	1	1	1
Montana <sup>¶</sup>	—	2	28	123	172	—	0	1	1	—	—	0	0	—	—
Nevada <sup>¶</sup>	N	0	0	N	N	—	0	4	12	—	—	0	2	4	2
New Mexico <sup>¶</sup>	1	1	4	37	89	—	0	1	4	21	—	0	0	—	4
Utah	—	3	26	156	278	—	0	1	1	1	—	0	1	2	1
Wyoming <sup>¶</sup>	—	0	3	8	16	—	0	1	1	2	—	0	1	2	4
Pacific	—	2	6	93	98	—	0	16	90	71	—	0	6	39	40
Alaska	—	1	4	48	38	—	0	0	—	—	—	0	0	—	—
California	—	0	2	9	30	—	0	16	90	70	—	0	6	39	39
Hawaii	—	1	4	36	30	—	0	0	—	—	—	0	0	—	—
Oregon	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
Washington	N	0	0	N	N	—	0	0	—	1	—	0	0	—	1
Territories															
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	4	16	25	—	0	0	—	—	—	0	0	—	—
Puerto Rico	5	4	17	166	550	—	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 reportable. NN: Not Nationally Notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

\* Case counts for reporting year 2011 are provisional and subject to change. For further information on interpretation of these data, see [http://www.cdc.gov/osels/ph\\_surveillance/nndss/phs/files/ProvisionalNationalNotifiableDiseasesSurveillanceData20100927.pdf](http://www.cdc.gov/osels/ph_surveillance/nndss/phs/files/ProvisionalNationalNotifiableDiseasesSurveillanceData20100927.pdf). Data for TB are displayed in Table IV, which appears quarterly.

† 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 reportable in all states. Data from states where the condition is not reportable are excluded from this table, except starting 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/osels/ph\\_surveillance/nndss/phs/infdi.htm](http://www.cdc.gov/osels/ph_surveillance/nndss/phs/infdi.htm).

¶ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).









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