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Great American Smokeout — November 15, 2012

The Great American Smokeout, sponsored by the American Cancer Society, is an annual event that encourages smokers to make a plan to quit, or to plan in advance and quit smoking on that day in an effort to stop permanently (*1*). The 37th annual Great American Smokeout will be held on November 15, 2012.

In 2010, nearly two out of three adult smokers wanted to quit smoking, and approximately half had made a quit attempt for >1 day in the preceding year (*2*). However, in 2011, an estimated 19.0% (43.8 million) of U.S. adults still smoke (*3*).

Quitting smoking has immediate benefits to health at any age, including reduced risk for heart disease and certain cancers. Getting help through counseling or medications can double or triple the chances for quitting (*4*). Additional information and support for quitting is available online (http://www.smokefree.gov) or by telephone (800-QUIT-NOW [800-784-8669]). In addition, real stories of persons who have quit successfully can be found on CDC's Tips from Former Smokers website at http://www.cdc.gov/tips.

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Current Cigarette Smoking Among Adults — United States, 2011

Tobacco use remains the single largest preventable cause of death and disease in the United States. According to the 2010 U.S. Surgeon General's report, approximately 443,000 U.S. adults die from smoking-related illnesses each year (*1*). In addition, smoking has been estimated to cost the United States $96 billion in direct medical expenses and $97 billion in lost productivity annually (*2*). To assess progress toward the *Healthy People 2020* (HP2020) objective to reduce cigarette smoking by adults (objective TU-1.1),* CDC's Office on Smoking and Health used data from the 2011 National Health Interview Survey (NHIS) to estimate current national cigarette smoking prevalence. The findings indicate that 19.0% of adults smoked cigarettes in 2011 and no statistically significant change in current adult smoking prevalence occurred from 2010 (19.3%) to 2011 (19.0%). Among daily smokers, the proportion who smoked ≥30 cigarettes per day (CPD) declined significantly,

*Additional information available at http://healthypeople.gov/2020/topicsobjectives2020.

INSIDE

Continuing Education examination available at http://www.cdc.gov/mmwr/cme/conted_info.html#weekly.

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from 12.6% in 2005 to 9.1% in 2011, whereas the proportion of those who smoked 1–9 CPD increased significantly, from 16.4% to 22.0%. To help reduce the national prevalence of cigarette smoking among adults to the HP2020 target of 12%, population-based prevention strategies (e.g., increasing prices of tobacco products, antitobacco media campaigns featuring graphic personal stories on the adverse health impact of smoking, smoke-free laws for workplaces and public places, and barrier-free access to help quitting) will need to be implemented more extensively. Such evidence-based tobacco control interventions can help adults quit and prevent the initiation of tobacco use (*3*).

The NHIS adult core questionnaire is administered by in-person interviews to a nationally representative sample of the noninstitutionalized, U.S. civilian population aged ≥18 years. The 2011 NHIS adult core sample included 33,014 respondents, and the overall response rate was 66.3% (*4*). Current smokers were those who had smoked at least 100 cigarettes during their lifetimes and, at the time of interview, reported smoking every day or some days. Former smokers were those who reported smoking at least 100 cigarettes during their lifetimes but currently did not smoke. A quit attempt was defined as a report by a current smoker that they had stopped smoking for >1 day during the preceding year because they were trying to quit smoking, or a report by a former smoker that they had quit during the preceding year.[†] Overall and sex-specific estimates of current smoking were calculated by age, race/ethnicity, education level, poverty status,[§] U.S. Census region,[¶] and disability status.[**] The mean number of CPD was calculated for daily current smokers.

† Additional information available at http://www.healthindicators.gov/Indicators/Smoking-cessation-attempts-by-adult-smokers-percent_1513/Profile.

§ Based on reported family income and 2010 poverty thresholds published by the U.S. Census Bureau.

¶ *Northeast:* Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South:* Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *West:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

** Functional disability defined based on self-reported presence of selected impairments, including vision, hearing, cognition, and movement. Limitations in performing activities of daily living (ADLs) defined based on response to the question, "Because of a physical, mental, or emotional problem, does [person] need the help of other persons with personal care needs, such as eating, bathing, dressing, or getting around inside this home?" Limitations in performing instrumental activities of daily living (IADLs) defined based on response to the question, "Because of a physical, mental, or emotional problem, does [person] need the help of other persons in handling routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?" Any disability/limitation defined as a "yes" response to at least one of the above (i.e., vision, hearing, cognition, movement, ADL, or IADL).

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Data were adjusted for nonresponse and weighted to provide national estimates of smoking prevalence. A chi-square test was used to assess the statistical significance of changes in prevalence from 2010 to 2011 ($p<0.05$). Logistic regression was used to analyze overall temporal changes in prevalence and CPD during 2005–2011, controlling for sex, age, and race/ethnicity. The Wald test was used to determine statistical significance ($p<0.05$) of trends.

In 2011, an estimated 19.0% (43.8 million) of U.S. adults were current cigarette smokers. Of these, 77.8% (34.1 million) smoked every day, and 22.2% (9.7 million) smoked some days. Overall, among current smokers and those who had quit during the preceding year, 51.8% had made a quit attempt for >1 day during the preceding year.

Overall smoking prevalence did not change significantly from 2010 to 2011 (Table). Smoking prevalence in 2011 was 21.6% among males and 16.5% among females. By race/ethnicity, prevalence was lowest among non-Hispanic Asians (9.9%) and highest among non-Hispanic American Indians/Alaska Natives (31.5%). Prevalence was lowest among adults aged ≥65 years (7.9%) and highest among those aged 25–44 years (22.1%). Prevalence was higher among adults living below the federal poverty level (29.0%) compared with those living at or above this level (17.9%). Also, prevalence was higher among those reporting having a disability (25.4%) compared with those who reported no disability (17.3%).

During 2005–2011, a slight overall decline in current smoking prevalence was noted; the largest decline in current smoking prevalence occurred in adults aged 18–24 years (from 24.4% to 18.9%; $p<0.05$ for trend) (Figure 1). Among daily smokers, a significant decline in mean CPD was observed from 2005 (16.7) to 2011 (15.1) ($p<0.05$ for trend). The proportion of daily smokers who smoked ≥30 CPD declined significantly from 2005 (12.6%) to 2011 (9.1%). Meanwhile, a significant increase was observed in the proportion of daily smokers who smoked 1–9 CPD (from 16.4% to 22.0%; $p<0.05$ for trend) (Figure 2).

Reported by

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Editorial Note

Current smoking prevalence declined most markedly from 2005 to 2011 among adults aged 18–24 years (from 24.4% to 18.9%), and this age group, which had the highest prevalence in 2005, now has the lowest of any group aged <65 years. Although overall smoking prevalence declined slightly since 2005, it was 19.0% in 2011, higher than the HP2020 target of 12% for all U.S. adults. This underscores the need for more extensive implementation of evidence-based interventions, such as those outlined in the World Health Organization's MPOWER package.[††] These include increasing the price of tobacco products, implementing smoke-free laws in workplaces and public places, warning about the dangers of tobacco use with antitobacco media campaigns, increasing access to help quitting, and enforcing restrictions on tobacco advertising, promotion, and sponsorship (*3*). Such population-based interventions have been shown to reduce population smoking prevalence as well as overall smoking intensity (i.e., CPD) (*5*).

Disparities in current smoking prevalence presented in this report are consistent with those in previous reports (*6*–*8*). The disparities in smoking prevalence by education level might result from differences in understanding of the health hazards of smoking and increased vulnerability to tobacco marketing (*8*).

In recent years, several advances in tobacco control have occurred in the United States. These include implementation of the 2009 Family Smoking Prevention and Tobacco Control Act, which granted the Food and Drug Administration the authority to regulate the manufacture, distribution, and marketing of tobacco products.[§§] Although not affecting these 2011 findings, the federal mass media campaign conducted in early 2012, which included graphic personal stories on the adverse health impact of smoking, might contribute to future decreases in prevalence (*9*).

What is already known on this topic?

Approximately one in five U.S. adults smoke cigarettes, and certain subpopulations have a higher prevalence of smoking. Smoking has been estimated to cost the United States $96 billion in direct medical expenses and $97 billion in lost productivity annually.

What is added by this report?

Although smoking prevalence declined slightly since 2005, it was 19.0% in 2011, higher than the *Healthy People 2020* target of 12% for all U.S. adults. Smoking prevalence is particularly high among U.S. adults living below the federal poverty level, those with less education, and those reporting having a disability or activity limitation.

What are the implications for public health practice?

To meet the *Healthy People 2020* target for smoking among adults, effective interventions need to be continued or augmented, such as a combination of smoke-free laws, tobacco price increases, access to tobacco cessation treatments and services, and antitobacco media campaigns featuring graphic personal stories on the adverse health impact of smoking.

[††] Additional information available at http://www.who.int/tobacco/mpower/mpower_report_full_2008.pdf.

[§§] Additional information available at http://www.fda.gov/tobaccoproducts/guidancecomplianceregulatoryinformation/ucm246129.htm.

TABLE. Percentage of persons aged ≥18 years who were current cigarette smokers,* by selected characteristics — National Health Interview Survey, United States, 2010 and 2011

	Men				Women				Total			
	2010 (n = 11,986)		2011 (n = 14,811)		2010 (n = 15,171)		2011 (n = 18,203)		2010 (n = 27,157)		2011 (n = 33,014)	
Characteristic	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Overall	**21.5**	**(20.7–22.3)**	**21.6**	**(20.7–22.5)**	**17.3**	**(16.5–18.1)**	**16.5**	**(15.8–17.3)**	**19.3**	**(18.7–19.9)**	**19.0**	**(18.4–19.6)**
Age group (yrs)												
18–24	22.8	(19.9–25.7)	21.3	(18.7–23.9)	17.4	(15.0–19.8)	16.4	(14.3–18.6)	20.1	(18.2–22.0)	18.9	(17.3–20.6)
25–44	24.3	(22.8–25.8)	24.5	(23.0–26.0)	19.8	(18.4–21.2)	19.7	(18.5–20.9)	22.0	(21.0–23.0)	22.1	(21.1–23.1)
45–64	23.2	(21.6–24.8)	24.4	(22.8–25.9)	19.1	(17.9–20.3)	18.5	(17.3–19.8)	21.1	(20.1–22.1)	21.4	(20.4–22.4)
≥65	9.7	(8.3–11.1)	8.9	(7.7–10.1)	9.3	(8.1–10.5)	7.1	(6.2–8.0)	9.5	(8.6–10.4)	7.9	(7.2–8.6)
Race/Ethnicity†												
White	22.6	(21.5–23.7)	22.5	(21.3–23.6)	19.6	(18.6–20.6)	18.8	(17.8–19.8)	21.0	(20.2–21.8)	20.6	(19.8–21.4)
Black	24.8	(22.3–27.3)	24.2	(22.0–26.4)	17.1	(15.1–19.1)	15.5	(13.9–17.0)	20.6	(19.1–22.1)	19.4	(18.1–20.8)
Hispanic	15.8	(14.0–17.6)	17.0	(15.2–18.8)	9.0	(7.8–10.2)	8.6	(7.4–9.8)	12.5	(11.4–13.6)	12.9	(11.8–14.1)
AI/AN	—§	—	34.4	(20.4–48.4)	36.0	(24.1–47.9)	29.1	(18.3–39.8)	31.4	(22.3–40.5)	31.5	(21.4–41.7)
Asian¶	14.7	(11.7–17.7)	14.9	(12.1–17.6)	4.3	(3.0–5.6)	5.5	(4.0–7.0)	9.2	(7.6–10.8)	9.9	(8.4–11.4)
Multiple race	28.4	(19.0–37.8)	29.1	(20.8–37.3)	23.8	(17.1–30.5)	26.0	(19.1–32.9)	25.9	(20.2–31.6)	27.4	(22.2–32.6)
Education**												
0–12 years (no diploma)	28.5	(26.1–30.9)	30.5	(28.0–33.1)	21.8	(19.6–24.0)	20.5	(18.5–22.6)	25.1	(23.5–26.7)	25.5	(23.9–27.1)
8th grade or less	20.3	(17.4–23.2)	20.0	(16.6–23.3)	11.2	(8.5–13.9)	9.9	(7.6–12.1)	16.2	(14.2–18.2)	15.0	(13.0–16.9)
9th–11th grade	38.3	(34.0–42.6)	40.3	(36.4–44.2)	29.8	(26.3–33.3)	29.2	(25.7–32.7)	33.8	(31.3–36.3)	34.6	(32.0–37.1)
12th grade, no diploma	22.4	(15.4–29.4)	29.4	(23.2–35.6)	21.2	(15.7–26.7)	20.9	(15.4–26.3)	21.7	(17.1–26.3)	25.1	(20.9–29.3)
GED	46.4	(40.1–52.7)	47.0	(41.1–52.8)	44.1	(37.6–50.6)	43.2	(37.5–48.9)	45.2	(40.9–49.5)	45.3	(41.2–49.4)
High school graduate	27.4	(25.2–29.6)	27.9	(25.7–30.1)	20.6	(18.9–22.3)	20.0	(18.4–21.7)	23.8	(22.4–25.2)	23.8	(22.5–25.2)
Some college, no diploma	25.1	(22.7–27.5)	25.2	(22.9–27.4)	21.6	(19.6–23.6)	20.0	(18.4–21.6)	23.2	(21.6–24.8)	22.3	(21.0–23.7)
Associate degree	21.8	(18.7–24.9)	21.4	(19.0–23.8)	16.4	(14.1–18.7)	17.5	(15.5–19.6)	18.8	(17.0–20.6)	19.3	(17.7–21.0)
Undergraduate degree	10.2	(8.8–11.6)	9.8	(8.5–11.2)	9.5	(8.1–10.9)	8.7	(7.5–10.0)	9.9	(8.9–10.9)	9.3	(8.4–10.2)
Graduate degree	7.1	(5.3–8.9)	5.2	(3.8–6.6)	5.4	(4.0–6.8)	4.8	(3.5–6.2)	6.3	(5.1–7.5)	5.0	(4.1–5.9)
Poverty status††												
At or above poverty level	20.2	(19.2–21.2)	20.2	(19.2–21.2)	16.4	(15.6–17.2)	15.6	(14.7–16.4)	18.3	(17.6–19.0)	17.9	(17.3–18.5)
Below poverty level	33.2	(30.3–36.1)	33.6	(30.9–36.3)	25.7	(23.6–27.8)	25.7	(23.7–27.8)	28.9	(27.1–30.7)	29.0	(27.3–30.8)
Unspecified	18.8	(15.9–21.7)	19.4	(16.7–22.0)	13.7	(11.7–15.7)	11.4	(9.6–13.2)	16.0	(14.3–17.7)	15.0	(13.5–16.6)
U.S Census Region§§												
Northeast	18.5	(16.5–20.5)	20.2	(18.0–22.4)	16.3	(14.8–17.8)	14.5	(13.3–15.8)	17.4	(16.2–18.6)	17.3	(15.9–18.6)
Midwest	22.9	(21.2–24.6)	23.2	(21.1–25.4)	20.8	(18.8–22.8)	20.3	(18.6–22.1)	21.8	(20.4–23.2)	21.8	(20.2–23.3)
South	23.9	(22.3–25.5)	23.8	(22.3–25.3)	18.3	(17.1–19.5)	17.8	(16.5–19.1)	21.0	(20.0–22.0)	20.7	(19.6–21.8)
West	18.8	(17.0–20.6)	17.8	(16.3–19.3)	13.0	(11.8–14.2)	12.3	(11.1–13.6)	15.9	(14.7–17.1)	15.0	(14.0–16.1)
Difficulty/Disability¶¶												
Any difficulty/disability	25.6	(22.5–28.7)	28.7	(25.9–31.5)	22.2	(19.6–24.9)	22.7	(20.2–25.2)	23.8	(21.8–25.8)	25.4	(23.4–27.5)
No difficulty/disability	20.3	(19.0–21.7)	20.0	(18.6–21.4)	16.6	(15.4–17.7)	14.7	(13.7–15.7)	18.4	(17.6–19.3)	17.3	(16.4–18.2)

Abbreviations: CI = confidence interval; AI/AN = American Indian/Alaska Native; GED = General Education Development certificate.

* Persons who reported smoking at least 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days. Excludes 190 (2010) and 86 (2011) respondents whose smoking status was unknown.

† Excludes 36 (2010) and 61 (2011) respondents of unknown race. Unless indicated otherwise, all racial/ethnic groups are non-Hispanic; Hispanics can be of any race.

§ Data not reported because relative standard error ≥30%.

¶ Does not include Native Hawaiians or Other Pacific Islanders.

** Among persons aged ≥25 years. Excludes 119 (2010) and 173 (2011) persons whose educational level was unknown.

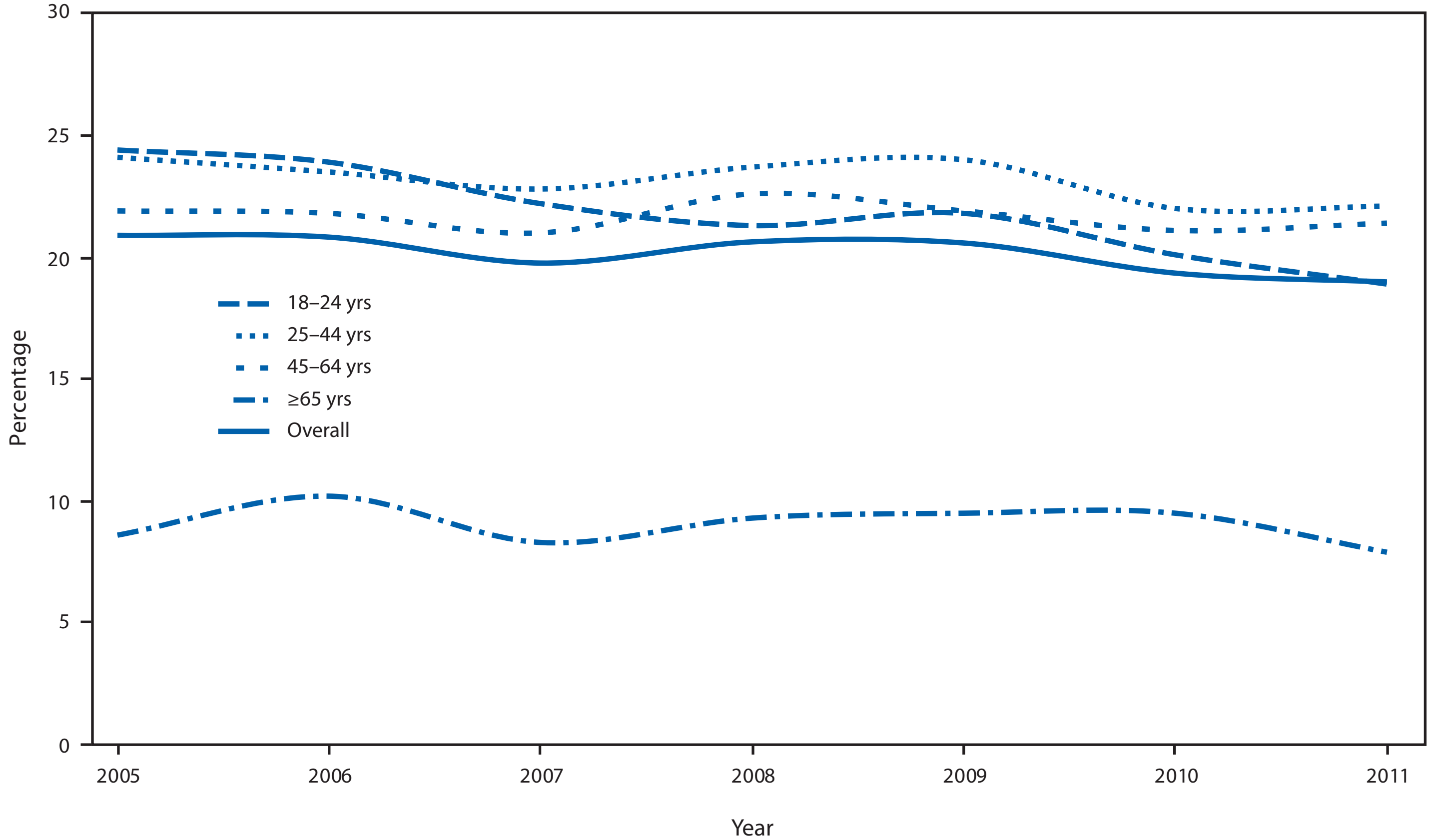
†† Family income is reported by the family respondent who might or might not be the same as the sample adult respondent from whom smoking information is collected. Estimates for family income in 2010 are based on reported family income and 2009 poverty thresholds published by the U.S. Census Bureau, and 2011 estimates are based on reported family income and 2010 poverty thresholds published by the U.S. Census Bureau.

§§ *Northeast*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwest*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *South*: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. *West*: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

¶¶ Functional disability defined based on self-reported presence of selected impairments, including vision, hearing, cognition, and movement. Limitations in performing activities of daily living (ADLs) defined based on response to the question, "Because of a physical, mental, or emotional problem, does [person] need the help of other persons with personal care needs, such as eating, bathing, dressing, or getting around inside this home?" Limitations in performing instrumental activities of daily living (IADLs) defined based on response to the question, "Because of a physical, mental, or emotional problem, does [person] need the help of other persons in handling routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?" Any disability/limitation defined as a "yes" response to at least one of the above (i.e., vision, hearing, cognition, movement, ADL, or IADL).

The findings in this report are subject to at least five limitations. First, the estimates of cigarette smoking were self-reported and were not validated by biochemical tests. However, research has indicated that self-reported smoking status correlates highly with measured serum cotinine levels (*10*). Second, questionnaires were administered only in English and Spanish, which might have resulted in nonresponse among persons who speak neither of those languages. Third, because NHIS does not include institutionalized populations and persons in the military, these results might not be generalizable to these groups. Fourth, the NHIS response rate of 66.3% might have resulted in nonresponse bias, even after adjustment for

FIGURE 1. Percentage of adults aged ≥18 years who were current smokers,* by age group — National Health Interview Survey, United States, 2005–2011



* Persons who reported smoking at least 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days.

nonresponse. Finally, small samples sizes resulted in imprecise annual estimates for certain population groups (e.g., American Indians/Alaska Natives).

Although comprehensive tobacco control programs[¶¶] have been effective in decreasing tobacco use in the United States, they remain underfunded. In fiscal year 2011, CDC recommended appropriate annual funding levels for each state comprehensive tobacco control program. However, only two states funded tobacco control programs at CDC-recommended levels, whereas 27 states funded at <25% of these levels (CDC, unpublished data, 2012). Despite increases in excise tax revenue, state funding for tobacco control programs has actually decreased during the past 5 years. Full implementation of comprehensive tobacco control programs at CDC-recommended funding levels might result in a substantial reduction in tobacco-related disease and death and billions of dollars in savings from averted medical costs and lost productivity (*3*).

[¶¶] Additional information available at http://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm.

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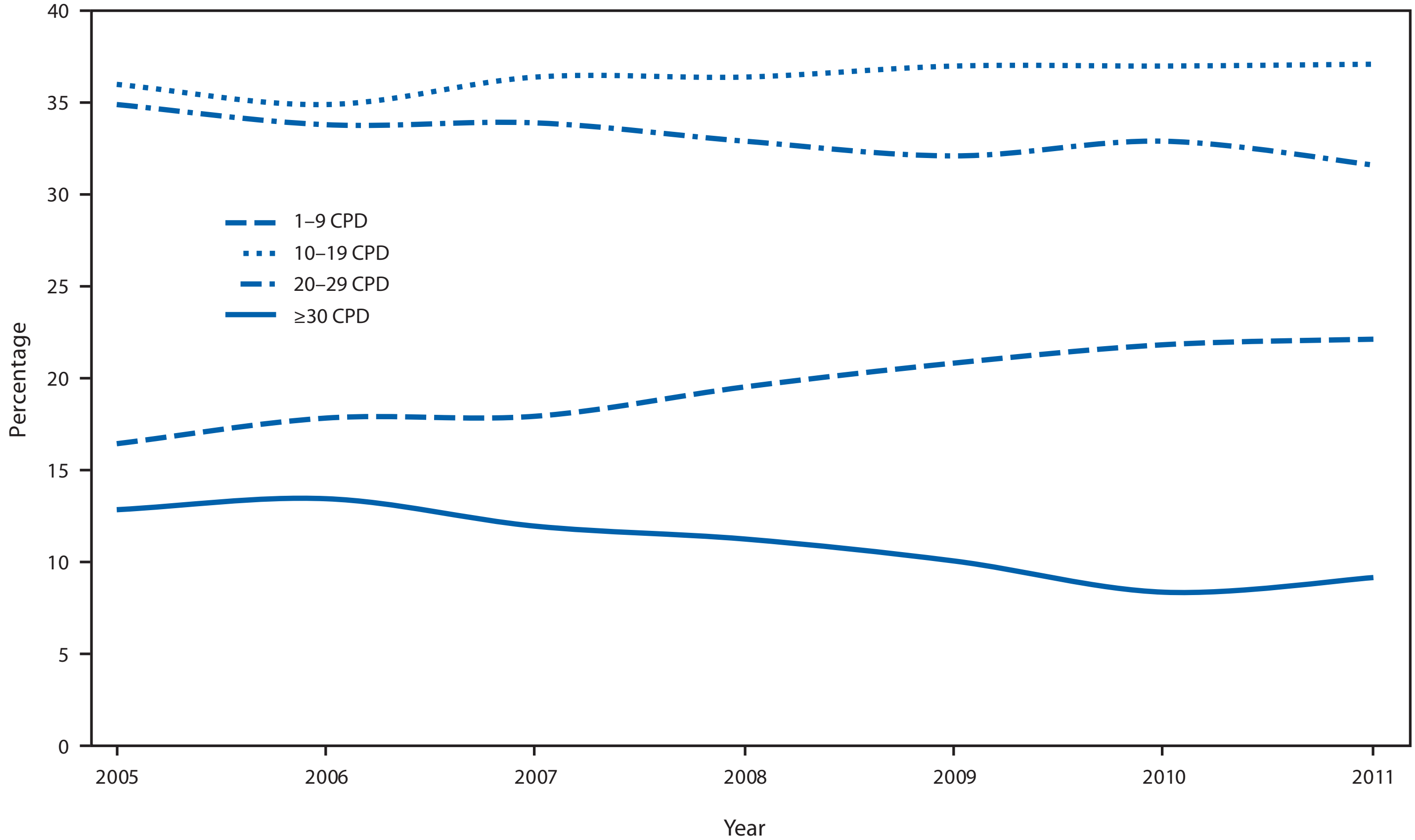
FIGURE 2. Percentage of daily smokers* aged ≥18 years, by number of cigarettes smoked per day (CPD) — National Health Interview Survey, United States, 2005–2011



* Persons who reported smoking at least 100 cigarettes during their lifetime and who, at the time of the survey, reported smoking cigarettes every day.

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Energy Drink Consumption and Its Association with Sleep Problems Among U.S. Service Members on a Combat Deployment — Afghanistan, 2010

Beverages marketed as energy drinks have become a popular form of caffeine consumption targeted at young males, with some brands containing the caffeine equivalent of 1–3 cups of coffee or cans of soda (*1*). Energy drinks also include other ingredients intended to boost physical energy or mental alertness, such as herbal substances, amino acids, sugars, and sugar derivatives; however, caffeine is the main active ingredient (*1*). Approximately 6% of adolescent and young adult males in U.S. civilian and military populations consume energy drinks daily (*2,3*). These products generally are unregulated and can have negative side effects (e.g., caffeine intoxication, overdose, withdrawal, and poor interactions with alcohol) (*1*). Paradoxically, excess consumption also can increase sleep problems and daytime sleepiness, which can impair performance (*1*). To determine the extent of energy drink use and the association with sleep problems and sleepiness during combat operations, Walter Reed Army Institute of Research analyzed data collected by Joint Mental Health Advisory Team 7 (J-MHAT 7) to Operation Enduring Freedom in Afghanistan in 2010. The analysis showed that 44.8% of deployed service members consumed at least one energy drink daily, with 13.9% drinking three or more a day. No differences by age or rank were found. Service members drinking three or more energy drinks a day were significantly more likely to report sleeping ≤4 hours a night on average than those consuming two drinks or fewer. Those who drank three or more drinks a day also were more likely to report sleep disruption related to stress and illness and were more likely to fall asleep during briefings or on guard duty. Service members should be educated regarding the potential adverse effects of excessive energy drink consumption on sleep and mission performance and should be encouraged to moderate their energy drink consumption in combat environments.

Mental Health Advisory Teams conduct comprehensive mental health surveillance of U.S. service members in combat environments and have administered the Deployment Well-Being Survey in Iraq during 2003–2009 and Afghanistan during 2005–2010 and 2012. The survey version used by J-MHAT 7 to collect data in Afghanistan during the summer of 2010 asked about demographic characteristics, deployment history, combat experiences, mental health, deployment stressors, family and relationship concerns, work environment, sleep difficulties and daytime sleepiness, health-care utilization, and various health behaviors, including energy drink consumption. The J-MHAT 7 survey was the first to inquire about the use of energy drinks.

In total, 1,249 service members were surveyed using a cluster sample of randomly selected U.S. Army and Marine combat platoons deployed to Afghanistan. All participants were male, because of the type of unit surveyed. Of those surveyed, 1,000 consented to have their data used for research purposes and 988 answered the following question: "How many energy drinks (e.g., Monster, Red Bull, 5-Hour Energy) do you use per day?" The six response options ranged from zero to five or more drinks per day. Service members also were asked about their use of sleep medication, average number of hours of sleep per day, concerns regarding lack of sleep, disruptions to sleep, and work impairment associated with sleepiness (Table 1). The number of sleep hours was dichotomized at ≤4 hours (reported by 24.2% of the persons sampled); in comparison, 50.2% of those sampled reported sleeping ≤5 hours. For comparison across sleep outcomes, energy drink use was divided into the following categories: no drinks, one to two drinks, and three or more drinks per day. These cutoffs were chosen because previous research demonstrated that 200 mg of caffeine, the equivalent of one to two energy drinks, improved cognitive performance in a military population (*4*). Prevalence rates of energy drink use are reported. Chi-square tests were used to determine significant differences between groups for sleep variables, using $p<0.05$ for significance. Post hoc analyses of the chi-square tests were conducted by examining discrepancies between observed and expected values for standardized residuals to produce z-scores and identify those cells contributing to the significant differences. The Sidak-Bonferroni correction was used to account for conducting multiple post hoc tests.

Service members surveyed were predominantly on active duty (93.2%), of junior enlisted rank (E1–E4; 71.2%), on their first deployment (60.8%), in the Army (75.5%), aged 18–24 years (66.6%), single (54.5%), not parents (70.9%), in the military <5 years (81.2%), and had been on this deployment <6 months at the time of the survey (54.3%). The prevalence of daily energy drink use was 44.8%; 13.9% consumed three or more per day (Table 2). Of those reporting daily energy drink use, 56.6% consumed more than one energy drink per day. No associations were found between the proportion of service members reporting the number of drinks used per day (i.e., 0, 1, 2, 3, 4, or ≥5) and rank category, number of deployments, branch of service, age, marital status, or being a parent. In the same comparison, however, service members in the National Guard or Reserves were significantly more likely to use energy drinks than their active duty counterparts ($p=0.002$).

Service members who drank three or more energy drinks per day were more likely to report ≤4 hours of sleep on average

TABLE 1. Survey questions used to assess sleep-related issues — Deployment Well-Being Survey, Joint Mental Health Advisory Team 7, Afghanistan, 2010

Survey question	Response options
Have you taken any medication for a sleep problem during this deployment?	No / Yes (specify medication)
Was the medication prescribed in theater?	No / Yes
On average, how many hours of sleep do you get per day?	≤3 / 4 / 5 / 6 / 7 / ≥8
Think about your experiences on this deployment. Rate how much trouble or concern has been caused by not getting enough sleep.	Very low / Low / Medium / High / Very high / Does not apply
How often have the following disrupted or interfered with your sleep over the past 30 nights? Stress related to combat Stress related to personal life and problems Poor sleep environment (too noisy, bright, hot, cold, etc.) High operational tempo Nighttime duties Off-duty leisure activities (video games, movies, etc.) Illness Other (please specify):	Not at all / Few or several nights / More than half the nights / Nearly every night
How often during this deployment, did you (even briefly) fall asleep during the following: Sitting in briefings* Riding in convoys On guard duty	Never / Seldom / Sometimes / Often
During this deployment, have you had an accident or made a mistake that affected the mission because of sleepiness?	No / Yes

* Referred to as "briefs" in survey questions and within the military.

TABLE 2. Daily energy drink consumption reported by service member and rank* during a combat deployment (N = 988) — Deployment Well Being Survey, Joint Mental Health Advisory Team 7, Afghanistan, 2010

	All service members†		Junior enlisted (E1–E4)		Senior enlisted (E5–E9)		Officer/Warrant officer	
Energy drinks per day	No.	(%)	No.	(%)	No.	(%)	No.	(%)
0	545	(55.2)	385	(54.8)	142	(56.6)	17	(51.5)
1	192	(19.4)	139	(19.8)	41	(16.3)	12	(36.4)
2	114	(11.5)	83	(11.8)	27	(10.8)	4	(12.1)
3	65	(6.6)	50	(7.1)	15	(6.0)	0	—
4	26	(2.6)	17	(2.4)	9	(3.6)	0	—
≥5	46	(4.7)	29	(4.1)	17	(6.8)	0	—

* No significant differences were observed in numbers of energy drinks consumed per day across rank categories (i.e., junior enlisted ranks, senior enlisted ranks, or warrant officer/officer), p=0.12.
† Rank was missing for one participant.

per night (38.2%) than service members who drank one to two (18.4%) or zero (23.9%) energy drinks per day (Table 3). The groups did not differ in their levels of concern regarding not getting enough sleep. Service members drinking three or more energy drinks per day were significantly more likely than the other groups to report sleep disruption on more than half the nights in the past 30 days because of stress related to combat, stress related to personal life, and illness. However, no differences were noted in sleep disruption because of the sleep environment, high operational tempo, nighttime duties, or leisure activities. Service members who drank three or more energy drinks per day also were significantly more likely to report sometimes or often falling asleep while sitting in briefings or while on guard duty, but not while riding in convoys. No differences in energy drink consumption were found related to having had an accident or making a mistake that affected the mission because of sleepiness (Table 3). Despite a significant, omnibus chi-squared association, after post-hoc analyses were conducted, no differences were found in sleep medication use or receiving prescriptions for sleep medications while deployed by levels of energy drink consumption (Table 3). Across sleep disruption and daytime sleepiness outcomes, service members who consumed one to two energy drinks did not differ from those not consuming energy drinks.

Reported by

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What is already known on this topic?

The use of energy drinks containing high levels of caffeine is increasingly common among teens and young adults in the United States; an estimated 6% consume them daily. Too much caffeine can increase sleep problems, resulting in sleepiness and impaired performance.

What is added by this report?

Among U.S. service members surveyed in a combat environment in Afghanistan in 2010, 45% reported consuming energy drinks daily. Service members using three or more energy drinks a day (14%) reported sleeping less, having more sleep disruptions from stress and illness, and falling asleep on guard duty and in briefings more frequently than those drinking two or fewer energy drinks a day.

What are the implications for public health practice?

Service members should be educated about the possible adverse effects of consuming high levels of energy drinks on sleep and mission performance, and they should be encouraged to moderate their energy drink consumption.

Editorial Note

Military and civilian findings show that more than half of adolescents and young adults drink at least one energy drink per month (*5*), with approximately 6% consuming energy drinks daily (*2,3*). In this study, 45% of service members reported consuming one or more energy drinks per day, a considerably higher prevalence. This might reflect the unique and extreme demands of a combat deployment and the widespread availability of energy drinks in the combat environment (e.g., free distribution in dining facilities and available for purchase in convenience stores). No differences in energy drink consumption by age or rank were observed, demonstrating the ubiquitous nature of energy drink consumption during deployment.

Consumption of three or more energy drinks per day was associated with negative sleep outcomes that included sleepiness on the job and sleeping ≤4 hours per night. This is a low number of hours of sleep even in the deployed environment, in which half of respondents averaged ≤5 hours of sleep. Although causality could not be ascertained from this cross-sectional study, this relationship is consistent with civilian studies demonstrating that caffeine use contributes to daytime sleepiness (*6*) and sleep problems (*1,6*), and that inadequate sleep and daytime sleepiness can impair work productivity (*7*). Further, this study suggests that high levels of energy drink consumption might indirectly impair performance in a military setting. Service members who consumed three or more energy drinks per day reported significantly greater sleep disruption because of combat stress, personal issues, and illness, but not because of external factors. This is similar to results found in a civilian study in which caffeine use caused an increase in nocturnal worry and sleeplessness (*8*) and a military study that found that mental health symptoms increased energy drink use (*9*). Because inadequate sleep can considerably influence a person's health, excessive energy drink consumption might indirectly contribute to poor health.

The findings in this report are subject to at least five limitations. First, cause and effect cannot be determined because the data are cross-sectional. It is unclear whether service members with sleep problems used more energy drinks to stay alert, or if heavy use of energy drinks led to sleep disruptions; published studies suggest a cyclical combination of both (*1,5*). Second, the survey did not allow for a true estimate of caffeine intake. The caffeine content in energy drinks varies by the size of the can and milligrams of caffeine per ounce (*1*). Leading brands contain 80–160 mg of caffeine in their smallest containers, similar to 1–2 cups of coffee, with some brands containing

TABLE 3. Association between daily energy drink consumption and sleep variables that measured sleep problems and daytime sleepiness during combat among U.S. service members (N = 988) — Deployment Well-Being Survey, Joint Mental Health Advisory Team 7, Afghanistan, 2010

		Energy drinks per day*		
Sleep variable	**p-value†**	**0 (n = 545)**	**1–2 (n = 306)**	**≥3 (n = 137)**
Took sleep medication on deployment	0.02	7.7	12.2	14.3
Sleep medication prescribed on deployment§	0.60	60.5	54.3	68.4
Slept 3–4 hours per night	<0.001	23.9	18.4	38.2¶
High concern about lack of sleep	0.68	28.9	31.8	29.5
Sleep disrupted on more than half the nights because of				
Stress related to combat	0.01	9.9	12.1	19.0¶
Stress related to personal life	0.001	9.6	10.2	21.2¶
Illness	0.01	1.8	1.3	5.9¶
Sleep environment	0.41	36.9	40.7	41.6
High operational tempo	0.24	18.5	19.7	25.0
Nighttime duties	0.31	34.6	35.8	28.5
Leisure activities	0.17	3.7	5.2	7.4
Fell asleep sometimes/often while				
Sitting in briefings**	0.01	11.2	11.8	21.3¶
On guard duty	0.02	7.4	6.6	14.0¶
Riding in convoys	0.12	25.5	29.5	33.8
Had an accident or made a mistake because of sleepiness that affected the mission	0.44	3.5	3.6	5.8

* Percentage of service members reporting each energy drink level responding affirmatively to the sleep variables.
† Significant at the p <0.05 value for the omnibus chi-square test.
§ Among those answering that they had taken sleep medication on deployment (n = 92).
¶ Significantly different from the expected value using the standardized residuals for post-hoc tests for chi-square analysis using a Sidak-Bonferroni correction (Z ≥ ±2.44).
** Referred to as "briefs" in survey questions and within the military.

up to 500 mg (*1*). In addition, the survey did not measure consumption of other caffeinated beverages (e.g., coffee, soft drinks, or tea). Third, the phrasing of the question about average number of energy drinks consumed per day might have resulted in an underestimate of energy drink use; a person who consumed several drinks a week, but did not consume them daily, might have answered zero to that question. Fourth, this study did not control for variables that might have confounded the relationship between energy drink consumption and sleep outcomes (e.g., mental health problems, physical injury, amount of time deployed, or peer group/unit effects). Nonetheless, survey data from questions about stress, illness, personal life, and leisure activities as reasons for sleep disruption might serve as proxies for those variables not analyzed. Finally, analyses did not control for sleep medication use, which also can cause daytime sleepiness. However, although groups differed in overall sleep outcomes, the groups did not differ in their prevalence of sleep medication use (approximately one in seven), suggesting that the main associations were not explained by use of sleep medication.

The widespread use of energy drinks across demographics and its association at high doses with sleep problems and work impairment, coupled with known associations between caffeine and sleep problems and sleepiness in the general population (*1,6,7*), support the need to educate service members about moderating consumption of energy drinks. Service members who used energy drinks in moderation (i.e., one or two per day) had similar levels of sleep problems and performance as those who did not use energy drinks. Based on the caffeine content of leading brands of energy drinks, this dosage is equivalent to the average caffeine consumption by men ages 20–29 years in the United States (*10*) and has been associated with cognitive performance (e.g., visual vigilance, reaction time, and alertness) (*1,4*). This also might explain the lack of a clear dose-response relationship between energy drink consumption and sleep problems.

The marketing of these types of drinks as energy boosters, together with their availability in the combat environment, makes it easy for service members to consume them in large volumes. Energy drinks are relatively new, generally unregulated, and lack warning labels. Service members should be educated that the long-term health effects of energy drink use are unknown, that consuming high doses of energy drinks might affect mission performance and sleep, and that, if used, energy drinks should be consumed in moderation.

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Progress Toward Poliomyelitis Eradication — Nigeria, January 2011–September 2012

In 1988, the World Health Assembly launched the Global Polio Eradication Initiative (GPEI) and, in 2012, declared the completion of polio eradication a programmatic emergency for global public health (*1*). To date, wild poliovirus (WPV) cases reported worldwide in 2012 are at historically low levels. Nigeria is one of only three countries with uninterrupted WPV transmission (in addition to Pakistan and Afghanistan) and has been the origin of WPV imported into 25 previously polio-free countries since 2003 (*2–4*). This report updates previous reports (*2–3,5*) and describes polio eradication activities and progress in Nigeria during January 2011–September 2012, as of October 30, 2012. The number of reported WPV cases increased from 21 in 2010 to 62 in 2011. During January–September 2012, a total of 99 WPV cases were reported, more than doubling from the 42 cases reported during the same period in 2011. During 2011, a total of 32 circulating vaccine-derived polio virus type 2 (cVDPV2) cases were confirmed; six cVDPV2 cases were confirmed during January–September 2012, compared with 18 cVDPV2 cases during the same period in 2011. Nigeria's 2012 Polio Eradication Emergency Plan (*6*) includes senior government leadership oversight, new program management and strategic initiatives, an accountability framework, and a surge in human resources to address chronically missed children during supplemental immunization activities (SIAs).* In 2012, indicators of immunization campaign quality show modest improvements; available data indicate gaps in surveillance. Continuing WPV transmission in Nigeria poses an ongoing risk for WPV reintroduction and outbreaks in polio-free countries and is a major obstacle to achieving global eradication (*7*).

Vaccination Activities

Infants and children are vaccinated against polio as part of a routine vaccination program and through SIAs. The estimated national routine vaccination coverage of infants with 3 doses of trivalent oral poliovirus vaccine (OPV) in Nigeria was 73% in 2011, compared with 54% in 2007 (*8*). Surveys indicate substantially lower coverage than the national average in the northern states, with wide variation within the majority of northern states.†

During January 2011–September 2012, one national and 10 subnational SIAs were conducted, primarily in high-risk northern states, targeting children aged <5 years using bivalent OPV type 1 and 3, as well as three national and four subnational SIAs using trivalent OPV. After the four campaigns conducted during January–September 2012, lot quality-assurance sampling§ surveys were used to assess the quality of SIAs in reaching all children. The proportion of sampled local government areas (LGAs) (equivalent to districts), in the 12 high-risk northern states that failed to meet the <20% missed children threshold was 82% (72 of 88) after the February 2012 SIA; the proportion decreased over subsequent SIAs: 74% (68 of 92) after the March SIA, 65% (70 of 108) after the May SIA, and 63% (91 of 145) after the July SIA.¶

A surrogate measure of OPV coverage through routine vaccination and SIAs is based on parental recall and vaccination cards of children aged 6–35 months with acute flaccid paralysis (AFP) not attributed to poliovirus (nonpolio AFP [NPAFP]). During all of 2011 and January–September 2012, 3% of children aged 6–35 months in high-risk northern states with NPAFP had never received a dose of OPV ("zero-dose children"), compared with 7% in 2010; the proportion of children in high-risk northern states with NPAFP cases who received ≥4 doses of OPV was 75% in 2011 and 76% during January–September 2012, compared with 60% in 2010 (Table).

Poliovirus Surveillance

AFP surveillance. Polio surveillance depends on detection of AFP cases with confirmation of poliomyelitis by viral isolation. Quality surveillance is measured through performance indicators with defined targets: NPAFP detection rates of ≥2 cases per 100,000 children aged <15 years and adequate stool specimen collection** in ≥80% of AFP cases. In 2011, the annual national NPAFP rate (per 100,000 population aged <15 years) was 7.9, and the proportion of AFP cases with adequate

* Mass campaigns conducted for a brief period (days to weeks) in which 1 dose of oral poliovirus vaccine is administered to all children aged <5 years, regardless of vaccination history. Campaigns can be conducted nationally or in sections of the country.

† Additional information available at http://www.measuredhs.com/pubs/pdf/sr173/sr173.pdf.

§ A sample of 10 children aged <5 years was selected from each of six randomly selected wards within local government areas. The <20% missed children threshold is defined as eight or fewer of these 60 children not being vaccinated in the most recent SIA.

¶ Preliminary results from lot quality-assurance sampling after an SIA in northern states in October 2012 demonstrate an additional decline in the proportion of LGAs failing to meet the <20% missed children threshold (63 of 134 [47%]).

** Adequate stool specimen collection is defined as two specimens collected at least 24 hours apart, both within 14 days of paralysis onset, and shipped on ice or frozen packs to a World Health Organization–accredited laboratory, arriving in good condition.

TABLE. Number of reported nonpolio acute flaccid paralysis (NPAFP) cases and acute flaccid paralysis surveillance indicators among children aged <15 years, and oral polio vaccination history among children aged 6–35 months with NPAFP — Nigeria, January 2011–September 2012*

	January–December 2011							January–September 2012						
				Zero dose		≥4 doses					Zero dose		≥4 doses	
Region/State	No. of NPAFP cases	NPAFP rate[†]	Adequate specimens (%)[§]	No.	(%)	No.	(%)	No. of NPAFP cases[¶]	NPAFP rate**	Adequate specimens (%)	No.	(%)	No.	(%)
High-risk northern states	2,411	8.6	90	41	(3)	958	(75)	2,261	9.9	90	35	(3)	863	(76)
Bauchi	213	8.6	97	0	(0)	111	(90)	189	9.3	94	3	(3)	72	(78)
Borno	148	6.5	94	9	(11)	51	(60)	139	7.7	96	0	(0)	53	(72)
Gombe	149	12.0	90	0	(0)	66	(93)	186	18.3	93	2	(3)	67	(89)
Jigawa	187	8.3	95	1	(1)	78	(77)	131	7.1	94	0	(0)	38	(72)
Kaduna	171	5.4	89	5	(5)	82	(80)	130	5.0	91	1	(2)	46	(72)
Kano	401	8.1	83	13	(7)	115	(62)	355	8.7	87	14	(8)	116	(65)
Katsina	173	5.7	83	6	(6)	69	(71)	203	8.2	76	5	(4)	82	(71)
Kebbi	205	12.1	85	2	(2)	97	(90)	303	21.8	92	0	(0)	159	(94)
Niger	250	11.9	93	0	(0)	116	(91)	181	10.5	93	1	(1)	84	(92)
Sokoto	190	9.9	93	3	(3)	60	(61)	213	13.5	87	5	(5)	70	(67)
Yobe	136	11.0	92	0	(0)	45	(60)	102	10.0	93	0	(0)	37	(71)
Zamfara	188	10.9	94	2	(2)	68	(70)	129	9.2	98	4	(6)	39	(57)
Other northern states[††]	1,000	9.4	92	11	(2)	411	(80)	1,071	12.4	95	5	(1)	432	(82)
Southern states[§§]	2,438	6.9	97	16	(1)	1,025	(75)	2,196	7.6	97	18	(1)	922	(77)
Total	**5,849**	**7.9**	**93**	**68**	**(2)**	**2,394**	**(76)**	**5,528**	**9.2**	**94**	**58**	**(2)**	**2,217**	**(77)**

* Data as of October 30, 2012.
† Per 100,000 children aged <15 years.
§ Two stool specimens collected at an interval of ≥24 hours within 14 days of paralysis onset and properly shipped to the laboratory and arriving in good condition.
¶ Includes cases pending final classification as of October 30, 2012.
** Annualized data.
†† Adamawa, Benue, Federal Capital Territory, Kogi, Kwara, Nasarawa, Plateau, and Taraba.
§§ Abia, Akwa Ibom, Anambra, Bayelsa, Cross River, Delta, Ebonyi, Edo, Ekiti, Enugu, Imo, Lagos, Ogun, Ondo, Osun, Oyo, and Rivers.

specimen collection was 93%. To date, the annualized national NPAFP rate in 2012 is 9.2, and the proportion of AFP cases with adequate specimen collection is 94%. Both indicators were met in all states during 2011 and all but one state during January–September 2012 (Table). The proportions of LGAs in high-risk northern states that met each indicator in 2011 and January–September 2012 were 82% and 80%, respectively.

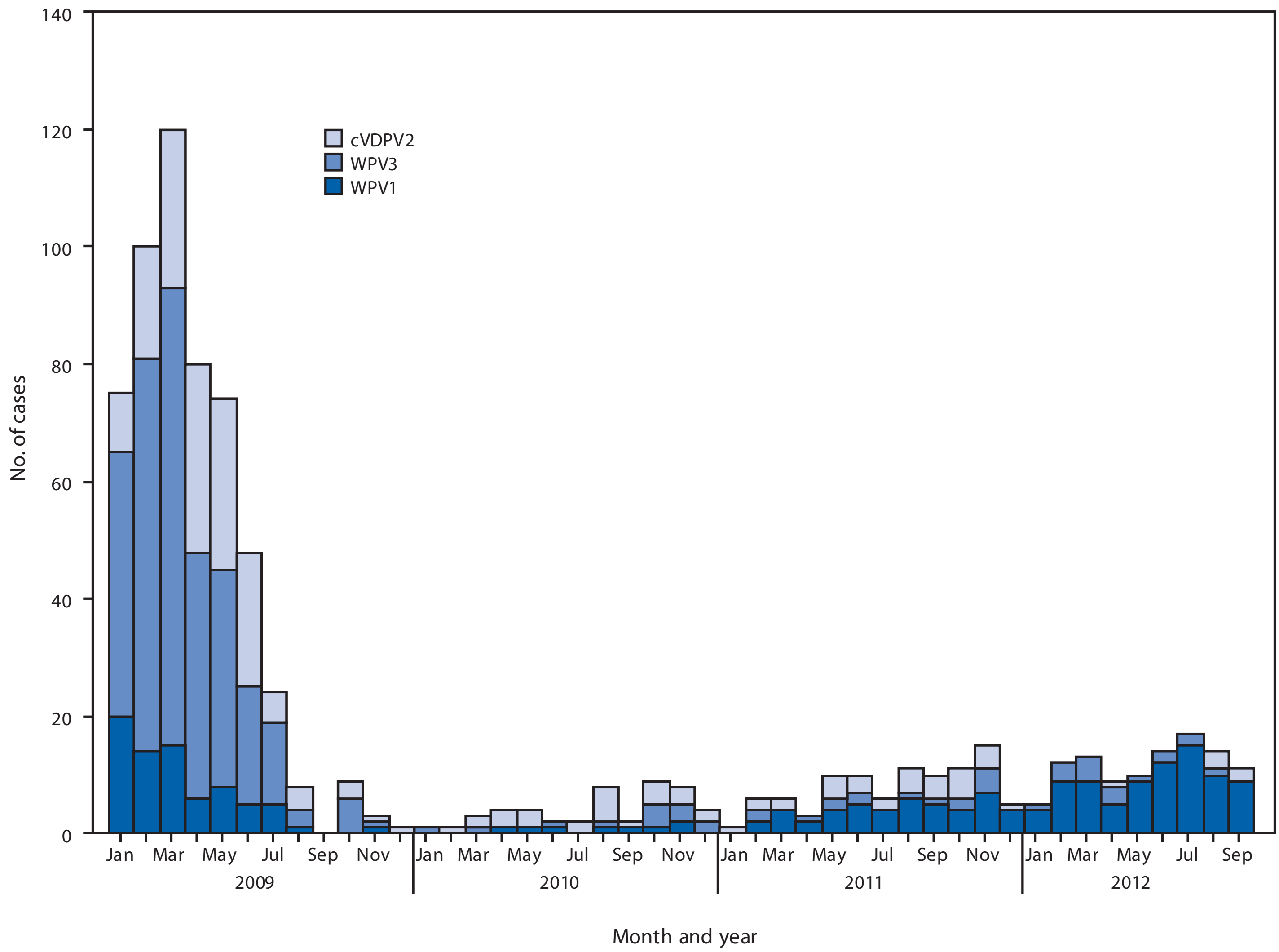
Environmental surveillance. To supplement AFP surveillance, collection of sewage samples every 4–5 weeks for poliovirus testing began in July 2011 at three sites in Kano state. During July–December 2011, cVDPV2 was isolated from 12 (67%) of 18 samples collected from Kano; during January–September 2012, of 25 collected, WPV type 3 (WPV3) was isolated from one specimen (4%), and cVDPV2 was isolated from three specimens (12%). Environmental surveillance every 2 weeks at four sites in Sokoto began in March 2012, and WPV1 and cVDPV2 were detected in 15 specimens (30%) and 22 specimens (44%), respectively, of 50 collected. During January–September 2012, AFP surveillance confirmed 18 WPV1, three WPV3, and three cVDPV2 cases in Kano; in Sokoto, eight WPV1 cases and three cVDPV2 cases were confirmed, indicating variability in environmental surveillance sensitivity possibly attributable to site selection.

WPV and cVDPV Case Incidence

During 2011, a total of 62 WPV (47 WPV1 and 15 WPV3) cases were reported in Nigeria, compared with 21 (eight WPV1 and 13 WPV3) cases in 2010, an increase of 195%; 99 WPV (82 WPV1 and 17 WPV3) cases were reported during January–September 2012, compared with 42 (33 WPV1 and nine WPV3) cases during the same period in 2011 (Figures 1 and 2), an increase of 136%. Cases occurred in 42 LGAs in eight states in 2011 and 55 LGAs in 11 states in 2012; all cases occurred in high-risk northern states, with the exception of one WPV3 case reported in Taraba in July 2012. Of 161 cases with onset during January 2011–September 2012, 148 (92%) occurred in children aged <5 years, and 13 (8%) occurred among children aged 5–14 years; 40 (25%) were "zero-dose" children, and 58 (36%) were children reported to have received ≥4 doses of OPV.

During 2011, a total of 32 cVDPV2 transmission cases were confirmed, a 19% increase from 27 cVDPV2 cases in 2010; six cVDPV2 cases were reported during January–September 2012, a 67% decrease from 18 cases during the same period in 2011 (Figures 1 and 2). Cases occurred in 27 LGAs in eight states in 2011 and three LGAs in two states (Kano and Sokoto) in 2012. Of 38 cases with onset during January 2011–September 2012, a total of 37 (97%) occurred in children aged <5 years,

FIGURE 1. Number of cases of wild poliovirus type 1 (WPV1), wild poliovirus type 3 (WPV3), and circulating vaccine-derived polio virus type 2 (cVDPV2), by month — Nigeria, January 2009–September 2012*



* Data as of October 30, 2012.

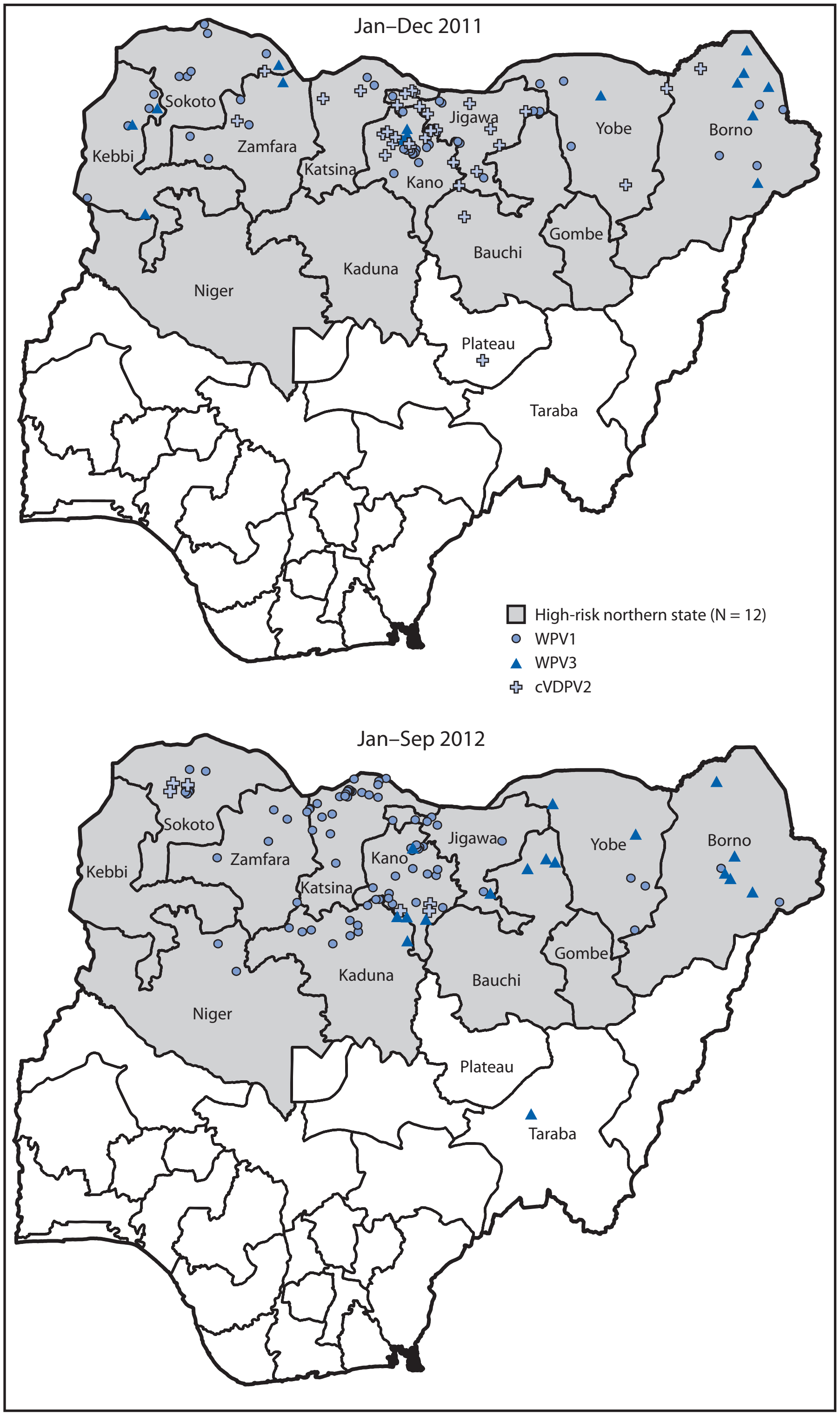
and one (3%) occurred among children aged 5–14 years; seven (18%) were "zero-dose" children, and 17 (45%) were children reported to have received ≥4 doses of OPV.

WPV and cVDPV Genomic Sequence Analysis

Analysis of the nucleotide sequence of the VP1 region of all WPV and cVDPV2 isolates is used to investigate transmission links, track international spread, and assess both viral diversity as a measure of circulation intensity and surveillance sensitivity (*9*).[††] After a substantial decline in the genetic diversity (reflected by the number of genetic clusters) of WPV1 strains from 21 clusters in 2009 to four clusters in 2010, the number of clusters increased to eight in 2011. The number of WPV3 clusters declined from 21 in 2009 to six in 2010 and to four in 2011. Genomic sequence analysis shows much less genetic linkage than expected with sensitive AFP surveillance, including some chains of WPV transmission during 2011–2012 not detected for more than a year. The proportion of WPV and cVDPV2 isolates (from cases and contacts) with less than expected genetic linkage (>98.5%) was 60% (29 of 48) in 2010, 31% (30 of 98) in 2011, and 16% (16 of 103) to date in 2012.

[††] All isolates are sequenced across the interval encoding the major capsid protein (VP1) (approximately 900 nucleotides), and results are analyzed to determine the likely origin (by state and local government area) of the virus. Isolates within a cluster share >95% VP1 nucleotide sequence identity.

FIGURE 2. Cases of wild poliovirus type 1 (WPV1), wild poliovirus type 3 (WPV3), and circulating vaccine-derived polio virus type 2 (cVDPV2),* by year — Nigeria, January 2011–September 2012†



* Each instance of a symbol represents one case of poliovirus and is drawn at random within district boundaries.
† Data as of October 30, 2012.

Reported by

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Editorial Note

Indigenous WPV1 and WPV3 transmission has continued in the northern states of Nigeria because of long-standing weaknesses in health system infrastructure, programmatic limitations in the planning and implementation of SIAs, and insufficient accountability, compounded by low public confidence in OPV since 2003 in some communities (*10*). By 2009, substantial progress in implementation of polio eradication activities (attributed to enhanced collaboration with traditional, religious, and political leaders) was followed by a sharp decline in cases; however, a substantial proportion of children, including each newborn cohort, remained chronically unvaccinated or undervaccinated. As WPV continues to circulate in multiple "sanctuaries"[§§] in northern states (*7*), WPV1 and WPV3 cases have increased since 2010, with cases occurring in a growing number of LGAs. Only 17 WPV3 cases were reported in

[§§] Discrete geographic locations with large numbers of missed children where the virus has ample opportunity to circulate.

What is already known on this topic?

Nigeria is one of three countries, including Afghanistan and Pakistan, where wild poliovirus (WPV) transmission has never been interrupted. Long-standing weaknesses in health system infrastructure, programmatic limitations in implementation of vaccination campaigns, weak accountability mechanisms, and a loss of public confidence in oral poliovirus vaccine since 2003 in some areas have contributed to ongoing circulation.

What is added by this report?

The number of WPV cases in northern Nigeria nearly tripled in 2011 compared with 2010, and more than doubled in the first 9 months of 2012 compared with the same period in 2011. In addition, transmission of circulating vaccine-derived polio virus type 2 continues. Nigeria's 2012 Polio Eradication Emergency Plan includes new program management and accountability initiatives along with a surge in human resources to vaccinate repeatedly missed children. Indicators of the quality of vaccination campaigns show modest improvements in 2012; routine vaccination coverage continues to be low. Despite national and state-level acute flaccid paralysis surveillance indicators generally being met, available data indicate continued gaps in surveillance.

What are the implications for public health practice?

Continuing WPV transmission in Nigeria poses an ongoing risk for WPV reintroduction into polio-free countries and is a major obstacle to the success of global eradication. Recent initiatives by government and partners have yet to demonstrate their impact epidemiologically, but indicate promise. If WPV case counts and extent of circulation are not reduced substantially by mid-2013, additional innovative strategies to interrupt WPV transmission might need to be considered.

Nigeria during January–September 2012, but WPV3 strains in Nigeria are more genetically diverse than WPV3 strains in Pakistan, the only other country with circulating WPV3 in 2012 (*4*). Cases of cVDPV2 have declined in 2012; however, extensive cVDPV2 circulation continues to be detected by environmental surveillance in Sokoto.

Although subnational AFP surveillance indicators generally are being met and sequence analysis suggests some improvement in sensitivity over time, environmental surveillance and genomic sequence evidence indicate that substantial surveillance gaps persist (*5,9*); these gaps might result from variability in AFP surveillance sensitivity at the LGA level or within population subgroups. Key challenges to achieving the high routine and supplementary vaccination coverage that is required to eliminate poliovirus transmission in Nigeria remain and have been compounded by insecurity in some states since late 2011. To address these challenges, the Nigeria 2012 Polio Eradication Emergency Plan (*6*) includes new initiatives to enhance high-level political oversight and improve program management and accountability, and provides for the deployment of a surge in human resources by government and partner organizations (primarily the World Health Organization and the United Nations Children's Fund) in high-risk states, down to the lowest administrative levels (wards). The augmented technical staff is implementing new strategies to reach chronically missed children during SIAs; these include the use of revised, detailed, and extensively validated house-to-house SIA microplans, more rigorous selection and training of vaccinators, revision of the size and composition of vaccination teams, and increased attention to the identification and vaccination of nomadic and other vulnerable populations. In some states, satellite mapping improved the demarcation of LGA, ward, and team boundaries and identified previously missed settlements. Volunteer community mobilizers have been deployed to settlements with historically high vaccination refusal rates. Insecurity in some LGAs in Borno and Yobe states creates difficulties in reaching undervaccinated children; addressing this will require enhanced engagement of affected communities.

A Nigerian presidential task force was established in March 2012 to provide leadership and oversight of state and local task forces and to improve local accountability for implementation of SIAs. An accountability "dashboard" tool[¶¶] has been developed and implemented for monitoring SIA preparations and execution at the LGA level. In addition, experienced Indian surveillance medical officers and a National Stop Transmission of Polio program of health professionals have been deployed to support the development of sustainable management capacity in high-risk LGAs. Efforts continue to identify and include nomadic and otherwise vulnerable children in current microplans, strengthen SIA supervision, and enhance community awareness and availability of routine vaccination through outreach services. The epidemiologic impact of the recent implementation of the Polio Eradication Emergency Plan has yet to be observed; however, improvements in SIA coverage are establishing a stronger footing for measurable progress in 2013. If WPV case counts and extent of circulation are not reduced substantially by mid-2013, additional innovative vaccination strategies to interrupt all WPV transmission will need to be considered. Ongoing WPV transmission in northern Nigeria remains a threat for reintroduction into southern Nigeria and surrounding polio-free countries in Africa, and is a major obstacle to success of GPEI (*7*).

¶¶ An interactive, visual presentation of the current status and historical trends of data. In this case, the data represent LGA-level information on key pre-, intra-, and post-SIA indicators to allow for course-correcting decision making at the state and national levels.

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Notes from the Field

Carbon Monoxide Exposures Reported to Poison Centers and Related to Hurricane Sandy — Northeastern United States, 2012

Hurricane Sandy made landfall as a post-tropical cyclone along the coast of southern New Jersey on Monday, October 29, 2012. In the wake of Sandy, state and federal public health agencies have observed an increase in the number of exposures to carbon monoxide (CO) reported to poison centers. CO is imperceptible and can cause adverse health effects ranging from fatigue and headache to cardiorespiratory failure, coma, and death (*1*). CO poisoning is a leading cause of mortality and morbidity in post-disaster situations, when widespread power outages occur and risky behaviors, such as improper placement of generators and indoor use of charcoal grills, increase (*2,3*).

As of November 6, a total of 263 CO exposures related to Hurricane Sandy had been reported to poison centers in eight states: 80 in New York, 61 in New Jersey, 44 in Connecticut, 39 in Pennsylvania, 27 in West Virginia, eight in Virginia, three in Maryland, and one in Delaware. Four of the reported exposures, all in Pennsylvania, resulted from the use of a generator in a garage and were fatal. This likely is an underestimation of the total number of fatal cases; larger numbers of CO-related deaths have been reported in the media. Where symptom information was available (n = 182), the most frequently reported symptoms were headache (69 cases, 37.9%), nausea (44 cases, 24.2%), and dizziness (36 cases, 19.8%). For comparison, the total number of CO exposures reported to poison centers and related to Hurricane Irene during August 28–September 2, 2011, was 49.

CO exposures can be prevented by 1) placing generators as far from homes as possible, but also at a safe distance from any nearby dwellings; the recommended distance for generator placement outside a home is a minimum of 25 feet (7.6 m) (*3*); 2) never using a generator, grill, camp stove, or other gasoline or charcoal-burning device inside a home, basement, garage, or outside near an open window; 3) never heating homes with a gas oven or by burning charcoal; 4) ensuring that fuel-burning space heaters are properly vented; 5) installing a battery-operated or battery back-up CO alarm in the home; and 6) leaving the building and dialing 911 if a CO alarm sounds, if CO poisoning is supected, or if any person begins to feel dizzy, lightheaded, or nauseous. More information about CO poisoning is available at http://www.cdc.gov/co/guidelines.htm. For suspected cases of CO poisoning and other exposures, persons should call their regional poison center at 1-800-222-1222.

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Announcements

World Pneumonia Day — November 12, 2012

Pneumonia is the leading killer of young children around the world, causing approximately 20% of all child deaths. For countries to reach United Nations Millennium Development Goal 4 of reducing child mortality by two thirds (from 1990 levels) by 2015, interventions to prevent pneumonia deaths need to be implemented (*1*). 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 exclusive breast feeding of young infants, among other strategies (*2*).

New vaccine introduction to prevent pneumonia in developing countries has had unprecedented momentum over the past few years. Hib vaccines have been introduced or are ready to be introduced in all 71 lowest-income countries eligible for GAVI Alliance funding by 2013, and pneumococcal conjugate vaccines are expected to be introduced in 54 of these countries by 2015 (*3*). In addition, a study to identify the etiology of pneumonia in developing countries is expected to generate data that will better guide prevention and treatment strategies, especially in countries that already are using Hib and pneumococcal vaccines (*4*).

The fourth annual World Pneumonia Day is being observed November 12, 2012, to raise awareness about pneumonia's toll and to promote interventions to protect against, treat, and prevent the disease globally. Activities are being promoted by a coalition of more than 140 community-based organizations, academic institutions, government agencies, and foundations. More information is available at http://worldpneumoniaday.org.

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Get Smart About Antibiotics Week — November 12–18, 2012

Antibiotic therapy is one of the most important tools available to combat life-threatening bacterial infections. Antibiotics have been so effective that consumers mistakenly seek antibiotics for conditions that do not benefit from antibiotic treatment. Among adults who participated in a recent HealthStyles survey, 38% expressed a desire for antibiotic treatment when seeking health care for the common cold (CDC, unpublished data, 2012). Overuse of antibiotics promotes antibiotic resistance and compromises their effectiveness. Infections caused by resistant bacteria have become more common, and many bacteria have become resistant to multiple antibiotics. Resistant infections are more challenging to treat, lead to more and longer hospital stays, and increase a patient's risk for dying.

November 12–18, 2012, is Get Smart About Antibiotics Week. The observance is a means to raise awareness about the threat of antibiotic resistance and the need to decrease inappropriate antibiotic use. Patients, health-care providers, hospital administrators, and policy makers must work together to employ effective strategies for improving antibiotic use to improve health, save lives, and save money.

CDC's Get Smart: Know When Antibiotics Work and Get Smart for Healthcare programs are working together to educate consumers and health-care providers in outpatient and inpatient settings about appropriate use of antibiotics. Information regarding appropriate use of antibiotics and how to participate in Get Smart About Antibiotics Week is available at http://www.cdc.gov/getsmart.

Announcement

Drowsy Driving Prevention Week — November 12–18, 2012

Drowsy driving has been identified as a major factor compromising public health and safety (*1*). In the general population, nearly 5% of respondents to the Behavioral Risk Factor Surveillance System reported that, at least once in the preceding 30 days, they had fallen asleep or nodded off while driving (*2*). Results of a questionnaire administered at truck inspection stations in several U.S. states indicated that 28% of commercial motor vehicle drivers acknowledged that at least once during the preceding month, they had fallen asleep while driving (*3*). Motor vehicle crashes are the leading cause of unintentional injury deaths among youths aged 15–24 years (*4*), and drowsy driving has been identified as one type of teen driver error (*5*). Given the prevalence and dire consequences of drowsy driving, CDC encourages parents, educators, health-care providers, and the general public to learn more about healthy sleep practices that can combat drowsy driving. Additional information is available online from the National Sleep Foundation at http://www.sleepfoundation.org and from CDC at http://www.cdc.gov/sleep.

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