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World Health Day — April 7, 2013

World Health Day and the 50th anniversary of the World Health Organization (WHO) will be observed April 7. The focus of World Health Day this year is high blood pressure (hypertension). Although preventable, high blood pressure remains a leading risk factor for heart disease and stroke and a major cause of morbidity and mortality worldwide (*1*). Globally, prevalence of hypertension among adults is 40% (*2*), and ischemic heart disease and stroke are the first and third leading causes of premature death (*3*).

CDC is working to help persons control blood pressure in multiple ways, including the Million Hearts initiative. Million Hearts aims to prevent 1 million heart attacks and strokes by 2017. In addition, CDC recently released a guide to strategies to improve blood pressure control for public health practitioners (available at http://millionhearts.hhs.gov/docs/mh_smbp.pdf) and Spanish-language materials to improve health among Hispanics (available at http://millionhearts.hhs.gov/resources/toolkits.html#spanishtoolkit).

Additional information on World Health Day is available at http://www.who.int/world-health-day/en. Additional information regarding hypertension and CDC's sodium reduction initiative is available at http://www.cdc.gov/bloodpressure, http://millionhearts.hhs.gov, and http://www.cdc.gov/salt.

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Self-Reported Hypertension and Use of Antihypertensive Medication Among Adults — United States, 2005–2009

Hypertension affects one third of adults in the United States (*1*) and is a major risk factor for heart disease and stroke (*2*). A previous report found differences in the prevalence of hypertension among racial/ethnic populations in the United States; blacks had a higher prevalence of hypertension, and Hispanics had the lowest use of antihypertensive medication (*3*). Recent variations in geographic differences in hypertension prevalence in the United States are less well known (*4*). To assess state-level trends in self-reported hypertension and treatment among U.S. adults, CDC analyzed 2005–2009 data from the Behavioral Risk Factor Surveillance System (BRFSS). The results indicated wide variation among states in the prevalence of self-reported diagnosed hypertension and use of antihypertensive medications. In 2009, the age-adjusted prevalence of self-reported hypertension ranged from 20.9% in Minnesota to 35.9% in Mississippi. The proportion reporting use of antihypertensive medications among those who reported hypertension ranged from 52.3% in California to 74.1% in Tennessee. From 2005 to 2009, nearly all states had an increased prevalence of self-reported hypertension, with percentage-point increases ranging from 0.2 for Virginia (from 26.9% to 27.1%) to 7.0

INSIDE

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for Kentucky (from 27.5% to 34.5%). Overall, from 2005 to 2009, the prevalence of self-reported hypertension among U.S. adults increased from 25.8% to 28.3%. Among those reporting hypertension, the proportion using antihypertensive medications increased from 61.1% to 62.6%. Increased knowledge of the differences in self-reported prevalence of hypertension and use of antihypertensive medications by state can help in guiding programs to prevent heart disease, stroke, and other complications of uncontrolled hypertension, including those conducted by state and local public health agencies and health-care providers.

BRFSS is a state-based telephone survey of health behaviors among adults aged ≥18 years.* The survey has been conducted by state health departments, with assistance from CDC, since 1984. Questions on hypertension are asked in odd-numbered years. Since 2005, two questions about hypertension have been included in BRFSS. The first question is, "Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?" Respondents who answer "yes" to the first question are then asked, "Are you currently taking medicine for your high blood pressure?" These questions were used to assess prevalence of self-reported hypertension and proportion reporting antihypertensive medication use among those with reported hypertension in 2005, 2007, and 2009. Estimates were calculated for the United States overall and for the 50 states and the District of Columbia. In addition to analysis by state, estimates were analyzed by age group, sex, race/ethnicity,† and level of education. Age-adjusted estimates were calculated using the 2000 U.S. standard population. Linear trends were assessed using orthogonal polynomial coefficients, and results were considered significant at $p<0.05$.

Median state response rates for BRFSS were 51.1% (range: 34.6%–67.4%) in 2005, 50.6% (range: 26.9%–65.4%) in 2007, and 52.5% (range: 37.9%–66.9%) in 2009. Total respondents were 356,112 in 2005, 430,912 in 2007, and 432,617 in 2009. State sample sizes ranged from 2,432 in 2009 (Alaska) to 39,549 in 2007 (Florida).

From 2005 to 2009, overall age-adjusted prevalence of self-reported hypertension in the United States increased from 25.8% to 28.3% (Table 1). Self-reported hypertension ranged from 21.1% (Colorado) to 33.5% (Mississippi) in 2005, and from 20.9% (Minnesota) to 35.9% (Mississippi) in 2009. From 2005 to 2009, nearly all states had an increased prevalence of self-reported hypertension, with percentage-point increases ranging from 0.2 for Virginia (from 26.9% to 27.1%) to 7.0 for Kentucky (from 27.5% to 34.5%). In 2009, the prevalence

* Details on BRFSS methodology, sampling procedures, design, and quality are available at http:/www.cdc.gov/brfss.

† In this report, persons identified as Hispanic might be of any race. Persons identified as black, white, Asian/Pacific Islander, or American Indian/Alaska Native are non-Hispanic. The five racial/ethnic categories are mutually exclusive.

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TABLE 1. Age-adjusted prevalence of self-reported hypertension among adults, by sociodemographic characteristics and location — Behavioral Risk Factor Surveillance System, United States, 2005–2009

Characteristic/Location	2005		2007		2009		Percentage-point change 2005 to 2009	% change 2005 to 2009	p-value for trend
	%	(95% CI)	%	(95% CI)	%	(95% CI)			
Total	**25.8**	**(25.6–26.1)**	**26.9**	**(26.7–27.2)**	**28.3**	**(28.0–28.5)**	**2.5**	**9.7**	**0.001**
Age group (yrs)									
18–44	10.8	(10.5–11.2)	11.8	(11.5–12.2)	13.3	(12.9–13.7)	2.5	23.1	<0.001
45–64	35.0	(34.5–35.5)	36.2	(35.8–36.7)	37.1	(36.7–37.5)	2.1	6.0	<0.001
≥65	56.0	(55.4–56.7)	58.1	(57.6–58.7)	59.6	(59.2–60.1)	3.6	6.4	<0.001
Sex									
Men	26.8	(26.4–27.2)	28.5	(28.1–28.9)	30.3	(29.9–30.7)	3.5	13.1	<0.001
Women	24.7	(24.4–25.0)	25.3	(25.1–25.6)	26.2	(25.9–26.5)	3.5	6.1	<0.001
Race/Ethnicity*									
White	24.6	(24.3–24.8)	25.8	(25.6–26.0)	27.1	(26.8–27.3)	2.5	10.2	<0.001
Black	36.3	(35.4–37.3)	38.1	(37.2–39.0)	39.6	(38.7–40.6)	3.3	9.1	<0.001
Asian/Pacific Islander	21.3	(19.0–23.8)	21.5	(19.4–23.8)	24.0	(22.4–25.7)	2.7	12.7	0.066
American Indian/ Alaska Native	30.8	(28.1–33.8)	31.0	(28.6–33.4)	32.0	(29.8–34.3)	1.2	3.9	0.536
Hispanic	26.4	(25.3–27.5)	26.4	(25.4–27.4)	27.6	(26.8–28.5)	1.2	4.5	0.092
Education									
<High school	31.2	(30.2–32.2)	30.6	(29.6–31.5)	33.6	(32.7–34.6)	2.4	7.7	<0.001
High school	28.1	(27.7–28.6)	30.1	(29.6–30.6)	31.4	(30.9–31.9)	3.3	11.7	<0.001
Some college	26.2	(25.7–26.7)	27.8	(27.3–28.3)	29.2	(28.8–29.7)	3.0	11.5	<0.001
≥College	21.5	(21.1–21.9)	22.5	(22.1–22.9)	23.8	(23.4–24.2)	2.3	10.7	<0.001
State/Area									
Alabama	30.2	(28.6–31.9)	31.9	(30.5–33.3)	34.0	(32.4–35.6)	3.8	12.4	0.001
Alaska	23.6	(21.5–25.7)	27.1	(24.7–29.7)	27.9	(25.7–30.0)	4.3	18.5	0.006
Arizona	22.1	(20.4–24.0)	24.2	(22.3–26.3)	25.7	(23.8–27.6)	3.6	16.0	0.007
Arkansas	27.9	(26.7–29.2)	29.8	(28.5–31.2)	32.2	(30.4–34.1)	4.3	15.3	<0.001
California	26.5	(25.2–27.9)	25.8	(24.5–27.1)	26.1	(25.3–26.9)	-0.4	-1.7	0.569
Colorado	21.1	(20.1–22.1)	22.0	(21.3–22.8)	22.7	(21.8–23.6)	1.6	7.6	0.019
Connecticut	22.4	(21.2–23.7)	24.5	(23.3–25.8)	25.4	(24.0–26.8)	3.0	13.3	0.002
Delaware	27.3	(25.7–28.9)	28.2	(26.6–29.8)	29.1	(27.4–30.8)	1.8	6.5	0.135
District of Columbia	28.5	(26.9–30.2)	29.1	(27.5–30.8)	27.0	(25.5–28.5)	-1.5	-5.4	0.184
Florida	25.0	(23.7–26.2)	25.2	(24.3–26.1)	27.7	(26.3–29.2)	2.7	11.0	0.004
Georgia	28.1	(26.8–29.4)	31.0	(29.7–32.2)	31.6	(29.8–33.4)	3.5	12.4	0.003
Hawaii	23.2	(21.8–24.5)	27.2	(25.9–28.6)	28.4	(27.1–29.8)	5.2	22.9	<0.001
Idaho	23.7	(22.5–24.9)	25.9	(24.5–27.2)	25.4	(24.1–26.8)	1.7	7.2	0.065
Illinois	25.4	(24.2–26.7)	27.6	(26.2–28.9)	28.4	(27.0–29.8)	3.0	11.7	0.002
Indiana	25.7	(24.5–26.9)	27.0	(25.8–28.3)	30.3	(29.2–31.4)	4.6	17.6	<0.001
Iowa	22.9	(21.7–24.0)	25.0	(23.8–26.2)	26.1	(24.8–27.5)	3.2	14.3	<0.001

See table footnotes on page 240.

of self-reported hypertension was, in general, higher in southern states and lower in western states (Figure).

Among those with self-reported hypertension, the estimated number of participants reporting use of antihypertensive medications was 45,023,301 in 2005, 50,191,337 in 2007, and 53,602,447 in 2009; the proportion increased from 61.1% (2005) to 62.6% (2009). In 2009, among those with self-reported hypertension, the proportion reporting current use of antihypertensive medication was highest in Tennessee (74.1%) and lowest in California (52.3%); however, Tennessee showed no significant change in reported antihypertensive medication use from 2005 to 2009, whereas California had a significant increase, from 48.0% to 52.3%. As with self-reported hypertension, the proportion of participants reporting use of antihypertensive medication generally was higher in southern states and lower in western states (Figure). States that showed significant increases in use of antihypertensive medications included California, Iowa, and Michigan, whereas Kentucky, Nebraska, and Rhode Island had significant decreases.

By selected characteristics, self-reported hypertension prevalence in 2009 was significantly higher among persons aged ≥65 years (59.6%) compared with persons aged 18–44 years (13.3%) and 45–64 years (37.1%); among men (30.3%) compared with women (26.2%); among blacks (39.6%) compared with American Indian/Alaska Natives (32.0%), Hispanics (27.6%), whites (27.1%), and Asian/Pacific Islanders (24.0%); and among those with less than a high school education (33.6%) compared with those with a high school education (31.4%), those with some college (29.2%), and those with a college degree or higher (23.8%). From 2005

TABLE 1. (*Continued*) Age-adjusted prevalence of self-reported hypertension among adults, by sociodemographic characteristics and location — Behavioral Risk Factor Surveillance System, United States, 2005–2009

Characteristic/Location	2005		2007		2009		Percentage-point change 2005 to 2009	% change 2005 to 2009	p-value for trend
	%	(95% CI)	%	(95% CI)	%	(95% CI)			
Kansas	23.7	(22.8–24.6)	26.1	(25.1–27.1)	27.6	(26.8–28.3)	3.9	16.4	<0.001
Kentucky	27.5	(26.2–28.9)	28.6	(27.2–30.0)	34.5	(33.0–36.1)	7.0	25.5	<0.001
Louisiana	29.3	(27.6–31.0)	31.3	(30.0–32.7)	34.6	(33.3–35.9)	5.3	18.2	<0.001
Maine	24.0	(22.6–25.4)	26.5	(25.1–27.8)	27.3	(26.1–28.5)	3.3	14.0	<0.001
Maryland	25.7	(24.6–26.7)	28.4	(27.2–29.6)	28.6	(27.3–29.8)	2.9	11.3	<0.001
Massachusetts	24.1	(23.0–25.2)	25.1	(24.3–25.8)	24.5	(23.6–25.5)	0.4	1.7	0.57
Michigan	27.1	(26.3–28.0)	27.8	(26.6–29.0)	28.7	(27.6–29.8)	1.6	5.7	0.03
Minnesota	21.8	(20.4–23.3)	21.0	(19.9–22.2)	20.9	(19.7–22.2)	-0.9	-4.2	0.346
Mississippi	33.5	(32.0–34.9)	33.3	(32.1–34.5)	35.9	(34.7–37.0)	2.4	7.1	0.013
Missouri	26.4	(24.9–28.0)	28.2	(26.6–29.9)	28.9	(27.3–30.5)	2.5	9.3	0.032
Montana	22.5	(21.1–23.9)	23.4	(22.2–24.6)	25.7	(24.5–27.0)	3.2	14.6	<0.001
Nebraska	23.8	(22.8–24.9)	25.4	(24.0–26.8)	25.5	(24.4–26.6)	1.7	7.1	0.027
Nevada	24.2	(22.2–26.2)	26.9	(25.2–28.8)	26.6	(24.6–28.6)	2.4	9.9	0.099
New Hampshire	22.5	(21.4–23.6)	24.6	(23.5–25.8)	26.9	(25.4–28.4)	4.4	19.7	<0.001
New Jersey	24.3	(23.5–25.2)	26.7	(25.3–28.2)	26.7	(25.6–27.8)	2.4	9.9	<0.001
New Mexico	22.3	(21.2–23.5)	24.8	(23.5–26.1)	25.8	(24.6–27.0)	3.5	15.6	<0.001
New York	24.9	(23.9–26.0)	26.2	(25.0–26.2)	27.5	(26.1–28.9)	2.6	10.3	0.004
North Carolina	29.1	(28.3–29.9)	28.4	(27.5–29.2)	30.6	(29.5–31.8)	1.5	5.3	0.03
North Dakota	21.8	(20.6–23.0)	24.5	(23.2–25.7)	25.3	(24.0–26.6)	3.5	15.8	<0.001
Ohio	25.9	(24.5–27.3)	26.9	(25.9–27.9)	29.8	(28.6–31.1)	3.9	15.2	<0.001
Oklahoma	29.0	(27.9–30.1)	29.9	(28.7–31.1)	32.2	(31.1–33.5)	3.3	11.3	<0.001
Oregon	22.9	(22.2–23.7)	25.4	(24.1–26.8)	25.6	(24.1–27.2)	2.7	11.7	0.002
Pennsylvania	25.1	(24.1–26.1)	25.7	(24.6–26.9)	29.2	(28.0–30.5)	4.1	16.4	<0.001
Rhode Island	25.5	(24.0–27.0)	27.1	(25.7–28.5)	28.7	(27.3–30.1)	3.2	12.8	0.002
South Carolina	30.8	(29.8–31.8)	29.3	(28.2–30.4)	31.1	(29.6–32.6)	0.3	0.9	0.762
South Dakota	23.9	(22.9–25.0)	24.1	(23.0–25.2)	27.8	(26.5–29.2)	3.9	16.3	<0.001
Tennessee	29.6	(27.9–31.3)	32.0	(30.2–33.8)	30.8	(29.0–32.7)	1.2	4.3	0.316
Texas	25.6	(24.4–26.7)	28.3	(27.4–29.2)	29.6	(28.4–30.9)	4.0	16.0	<0.001
Utah	21.2	(20.0–22.4)	22.4	(21.2–23.7)	25.5	(24.5–26.5)	4.3	20.1	<0.001
Vermont	22.7	(21.8–23.7)	23.3	(22.2–24.5)	25.1	(23.9–26.3)	2.4	10.4	0.003
Virginia	26.9	(25.5–28.4)	26.5	(25.1–28.0)	27.1	(25.5–28.8)	0.2	0.7	0.867
Washington	24.1	(23.5–24.8)	25.2	(24.6–25.8)	27.5	(26.7–28.2)	3.4	13.8	<0.001
West Virginia	28.8	(27.3–30.3)	30.4	(28.9–31.9)	34.6	(33.1–36.3)	5.8	20.2	<0.001
Wisconsin	24.3	(23.1–25.6)	25.2	(23.9–26.5)	26.4	(24.7–28.1)	2.1	8.5	0.054
Wyoming	22.6	(21.5–23.8)	24.1	(22.9–25.2)	25.0	(23.9–26.2)	2.4	10.7	0.004

Abbreviation: CI = confidence interval.

* In this report, persons identified as Hispanic might be of any race. Persons identified as black, white, Asian/Pacific Islander, or American Indian/Alaska Native are non-Hispanic. The five racial/ethnic categories are mutually exclusive.

to 2009, the prevalence of self-reported hypertension increased for all sociodemographic subgroups, although the linear trends were not significant for Hispanics, Asian/Pacific Islanders, and American Indian/Alaska Natives (Table 1).

Among persons reporting hypertension in 2009, the proportion reporting antihypertensive medication use was significantly higher among persons aged ≥65 years (94.1%) compared with those aged 18–44 years (45.1%) and 45–64 years (82.3%); among women (66.9%) compared with men (59.9%); and among blacks (71.6%) compared with Hispanics (55.2%) (Table 2). From 2005 to 2009, significant increases in self-reported use of antihypertensive medication among those reporting hypertension were observed among blacks (from 67.0% to 71.6%) and Hispanics (from 51.2% to 55.2%).

Reported by

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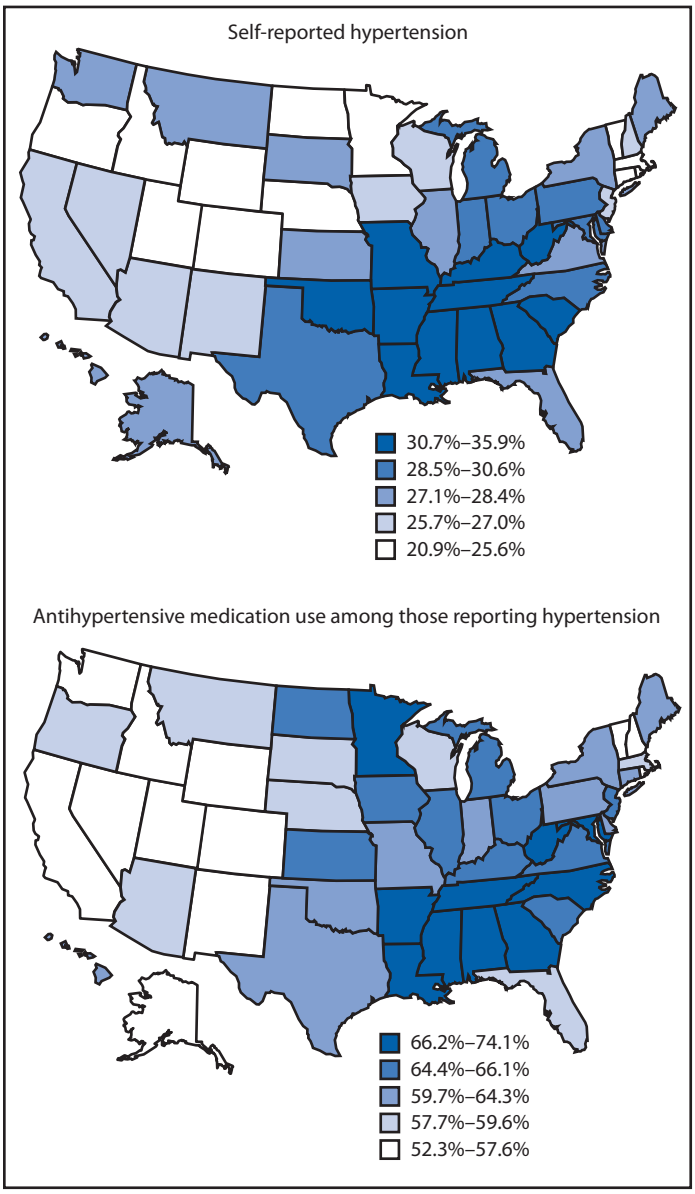
Editorial Note

The findings in this report, using BRFSS data, indicate that from 2005 to 2009, a small but significant increase in the prevalence of self-reported hypertension was observed among U.S. adults. Among those with self-reported hypertension, the proportion who reported use of antihypertensive medication also increased significantly.

In 2011, a report based on results from the National Health and Nutrition Examination Survey (NHANES) showed that

FIGURE. Age-adjusted prevalence of self-reported hypertension among adults and the proportion of those participants reporting use of antihypertensive medication, by state — Behavioral Risk Factor Surveillance System, United States, 2009



among adults aged ≥18 years, the prevalence of measured hypertension did not increase significantly from 1999–2002 to 2005–2008; however, the use of antihypertensive medication and control of hypertension showed significant increases (*1*). The prevalence of measured hypertension in NHANES did not increase during 1999–2008 (*1*); therefore, the increase in self-reported hypertension described in the current report likely is related to an increase in the awareness of hypertension. Measured blood pressure is not available with BRFSS surveys; therefore, hypertension control could not be assessed in the current report. The findings in this report show that among persons with hypertension, the proportion reporting antihypertensive medication use increased overall from 2005 to 2009; however, only a few states showed significant increases or decreases in the proportion reporting antihypertensive medication use.

Substantial differences among states were observed for self-reported hypertension prevalence, in general, the prevalence was higher in southern states than in other regions. Use of antihypertensive medication varied by state, but overall BRFSS estimates generally were consistent with other national estimates (*5*–*7*). The recent REasons for Geographic and Racial Differences in Stroke (REGARDS) study found that, compared with whites, black participants were more aware of hypertension and more likely to be treated. However, among those treated, blacks were less likely than whites to have their blood pressure controlled (*5*). The high prevalence of hypertension in the southern states found in this study is in the "stroke belt," a geographically identified region of high stroke morbidity and mortality, and likely is contributing to the disparate burden of disease in the region (*8*). The findings by sex were similar to results from NHANES 2005–2008, which found that antihypertensive treatment was lower among men than women (*7*).

What is already known on this topic?

Hypertension is a major risk factor for cardiovascular disease. In the United States, hypertension affects approximately one third of the adult population. Differences in prevalence of hypertension and use of antihypertensive medications exist among states and sociodemographic subgroups. As with this report, U.S. states and territories frequently use Behavioral Risk Factor Surveillance System data to aid in tracking priority health conditions and behaviors and to support the targeting of limited programmatic resources to high-prevalence areas.

What is added by this report?

From 2005 to 2009, the prevalence of self-reported hypertension among U.S. adults increased from 25.8% to 28.3%. Among those with self-reported hypertension, use of antihypertensive medications increased from 61.1% to 62.6%. Among states, rates of self-reported hypertension in 2009 ranged from 20.9% to 35.9%.

What are the implications for public health practice?

Improving hypertension awareness and initiating appropriate treatment are important to increase blood pressure control and reduce risk for heart disease and stroke. The findings in this study provide public health practitioners information to help target blood pressure control efforts. Public health officials, particularly in those states with a high prevalence of hypertension, should consider a coordinated and multifactorial approach to blood pressure control with focused attention in areas including sodium reduction, health systems strategies such as promotion of the collection and use of quality measures, promotion of team-based care, and community-clinical linkages.

TABLE 2. Among participants with self-reported hypertension, age-adjusted proportion of those reporting use of antihypertensive medication among adults, by sociodemographic characteristics and location — Behavioral Risk Factor Surveillance System, United States, 2005–2009

Characteristic/Location	2005 %	2005 (95% CI)	2007 %	2007 (95% CI)	2009 %	2009 (95% CI)	Percentage-point change 2005 to 2009	% change 2005 to 2009	p-value for trend
Total	**61.1**	**(60.3–61.9)**	**63.2**	**(62.4–64.0)**	**62.6**	**(61.8–63.5)**	**1.5**	**2.5**	**0.016**
Age group (yrs)									
18–44	43.6	(42.1–45.1)	47.5	(45.9–49.1)	45.1	(43.6–46.6)	1.5	3.4	0.172
45–64	80.0	(79.2–80.8)	82.2	(81.5–82.8)	82.3	(81.7–82.8)	2.3	2.9	<0.001
≥65	93.0	(92.4–93.4)	93.9	(93.6–94.3)	94.1	(93.8–94.3)	1.1	1.2	<0.001
Sex									
Men	58.0	(56.8–59.1)	61.1	(59.9–62.2)	59.9	(58.8–61.1)	1.9	3.3	0.014
Women	65.2	(64.0–66.4)	66.0	(64.9–67.1)	66.9	(65.7–68.0)	1.7	2.6	0.054
Race/Ethnicity*									
White	62.4	(61.4–63.4)	64.3	(63.3–65.2)	62.4	(61.5–63.3)	0.0	0.0	0.964
Black	67.0	(65.1–68.0)	69.5	(67.4–71.4)	71.6	(69.0–74.3)	4.6	6.9	0.004
Asian/Pacific Islander	61.4	(55.5–67.0)	60.1	(54.1–65.8)	60.2	(55.1–65.0)	-1.2	-2.0	0.752
American Indian/ Alaska Native	59.8	(52.4–66.8)	61.9	(56.5–67.0)	61.8	(56.3–67.1)	2.0	3.3	0.668
Hispanic	51.2	(48.6–53.7)	54.9	(52.5–57.3)	55.2	(53.0–57.3)	4.0	7.8	0.019
Education									
<High school	56.7	(54.3–59.2)	57.6	(55.2–60.1)	59.6	(57.1–62.2)	2.9	5.1	0.106
High school	62.4	(60.9–63.8)	63.5	(62.0–64.9)	62.9	(61.3–64.4)	0.5	0.8	0.645
Some college	61.3	(59.9–62.7)	64.0	(62.6–65.4)	62.8	(61.4–64.1)	1.5	2.4	0.138
≥College	61.6	(59.8–63.3)	64.7	(62.7–66.6)	62.6	(61.1–64.1)	1.0	1.6	0.373
State/Area									
Alabama	68.9	(63.6–73.8)	78.7	(73.7–83.0)	72.5	(67.2–77.3)	3.6	5.2	0.325
Alaska	54.3	(49.3–59.2)	59.4	(52.8–65.7)	53.8	(47.7–59.8)	-0.5	-0.9	0.907
Arizona	60.8	(52.7–68.3)	59.1	(51.4–66.4)	58.9	(52.7–64.9)	-2.0	-3.1	0.712
Arkansas	65.6	(61.7–69.3)	70.2	(65.1–74.9)	67.6	(61.1–73.5)	2.0	3.1	0.59
California	48.0	(45.0–51.1)	52.3	(48.4–56.2)	52.3	(49.9–54.6)	4.3	8.8	0.032
Colorado	55.5	(51.6–59.4)	57.0	(53.7–60.2)	57.0	(53.6–60.3)	1.5	2.6	0.588
Connecticut	64.8	(58.2–70.9)	64.9	(59.8–69.7)	59.9	(55.5–64.1)	-4.9	-7.7	0.205
Delaware	66.2	(61.8–70.4)	62.5	(58.1–66.8)	62.7	(58.2–67.0)	-3.5	-5.4	0.261
District of Columbia	61.7	(56.9–66.4)	59.9	(55.7–63.9)	59.6	(55.2–63.8)	-2.1	-3.5	0.507
Florida	62.2	(56.5–67.5)	63.3	(60.3–66.2)	59.2	(55.1–63.1)	-3.0	-4.8	0.385
Georgia	65.9	(61.9–69.6)	66.3	(63.2–69.2)	70.2	(62.4–77.0)	4.3	6.5	0.309
Hawaii	60.4	(55.5–65.1)	60.7	(56.1–65.0)	64.0	(59.8–68.0)	3.6	5.9	0.266
Idaho	53.5	(49.4–57.5)	58.3	(52.8–63.6)	56.2	(51.4–60.8)	2.7	5.0	0.398
Illinois	62.0	(57.5–66.3)	64.0	(59.3–68.4)	65.0	(59.5–70.1)	3.0	4.8	0.401
Indiana	64.3	(60.7–67.8)	66.7	(61.9–71.2)	63.9	(60.3–67.3)	-0.4	-0.7	0.857
Iowa	57.6	(53.3–61.9)	62.1	(58.0–65.9)	66.1	(61.0–70.9)	8.5	14.7	0.012

See table footnotes on page 243.

The findings in this report are subject to at least three limitations. First, data were self-reported, and hypertension and use of antihypertensive medications were not verified independently. Second, BRFSS surveys only noninstitutionalized persons with landline telephones; in 2009, 24.5% of U.S. households only had cellular telephone service (*9*). Finally, median state response rates for BRFSS were low; however, BRFSS provides the only available state-specific estimates of hypertension prevalence and antihypertensive medication use.

Hypertension is a major modifiable risk factor for cardiovascular disease, and improving awareness of hypertension is an important first step to treating and controlling hypertension and preventing heart disease and stroke. Clinical guidelines for hypertension management emphasize the control of hypertension through participation in healthy lifestyle behaviors, and using appropriate and specific antihypertensives medications with integrated clinical systems to support sustained adherence (*2*). A CDC goal is to increase public health interventions in clinical and community settings to reduce the deleterious effects of hypertension by increasing awareness and control of high blood pressure.§ One effective intervention is the Community Preventive Services Task Force recommendation for use of team-based care to improve blood pressure control.¶ Currently, 41 states receive CDC funding to develop and implement heart disease and stroke prevention programs.**

§ Available at http://www.cdc.gov/dhdsp/programs/nhdsp_program/goals.htm.
¶ Available at http://www.thecommunityguide.org/cvd/teambasedcare.html.
** Information available at http://www.cdc.gov/dhdsp/programs/nhdsp_program/index.htm.

TABLE 2. (*Continued*) Among participants with self-reported hypertension, age-adjusted proportion of those reporting use of antihypertensive medication among adults, by sociodemographic characteristics and location — Behavioral Risk Factor Surveillance System, United States, 2005–2009

Characteristic/Location	2005		2007		2009		Percentage-point change 2005 to 2009	% change 2005 to 2009	p-value for trend
	%	(95% CI)	%	(95% CI)	%	(95% CI)			
Kansas	64.1	(60.7–67.3)	61.8	(57.6–65.9)	64.7	(62.1–67.3)	0.6	1.0	0.766
Kentucky	73.4	(68.9–77.5)	73.2	(67.7–78.2)	65.7	(61.4–69.7)	-7.7	-10.6	0.011
Louisiana	73.4	(68.3–78.0)	76.3	(72.2–79.9)	71.4	(67.4–75.0)	-2.0	-2.8	0.514
Maine	61.4	(56.0–66.5)	58.9	(55.6–62.0)	59.8	(56.2–63.3)	-1.6	-2.6	0.623
Maryland	66.7	(60.3–70.3)	64.3	(61.0–67.4)	67.4	(64.1–70.4)	0.7	1.0	0.796
Massachusetts	58.1	(54.2–62.0)	61.7	(59.1–64.2)	59.3	(55.9–62.6)	1.2	2.0	0.655
Michigan	60.8	(58.1–63.4)	62.8	(59.4–66.0)	65.6	(62.0–69.0)	4.8	7.9	0.032
Minnesota	65.6	(56.0–74.0)	66.2	(59.5–72.3)	72.7	(66.0–78.5)	7.1	10.9	0.207
Mississippi	70.3	(64.5–75.4)	73.1	(69.5–76.4)	72.4	(68.2–76.2)	2.1	3.0	0.545
Missouri	65.7	(60.8–70.2)	61.3	(57.5–64.9)	63.3	(58.5–67.8)	-2.4	-3.6	0.482
Montana	52.0	(48.0–55.9)	56.5	(52.6–60.4)	58.4	(52.3–64.3)	6.4	12.4	0.08
Nebraska	65.6	(60.9–70.1)	62.4	(57.8–66.8)	58.9	(55.3–62.4)	-6.7	-10.3	0.023
Nevada	49.9	(44.7–55.1)	52.4	(47.5–57.3)	55.3	(49.4–61.1)	5.4	10.8	0.178
New Hampshire	59.6	(55.9–63.1)	57.2	(53.5–60.9)	57.6	(53.3–61.8)	-2.0	-3.3	0.495
New Jersey	60.9	(58.1–63.6)	62.0	(58.4–65.5)	64.7	(60.2–69.0)	3.8	6.3	0.147
New Mexico	60.0	(53.6–66.0)	61.9	(56.8–66.6)	55.8	(52.0–59.5)	-4.2	-7.0	0.261
New York	59.7	(56.2–63.0)	61.0	(57.0–64.8)	61.2	(57.3–65.0)	1.5	2.6	0.546
North Carolina	63.5	(61.5–65.5)	67.5	(64.2–70.5)	66.7	(62.8–70.4)	3.2	5.0	0.152
North Dakota	63.5	(58.8–68.0)	57.6	(53.8–61.4)	64.6	(59.8–69.1)	1.1	1.7	0.75
Ohio	63.3	(59.2–67.3)	63.4	(60.4–66.2)	65.7	(60.5–70.6)	2.4	3.7	0.474
Oklahoma	67.2	(63.3–70.8)	64.3	(60.4–68.0)	63.8	(59.8–67.6)	-3.4	-5.1	0.218
Oregon	56.8	(53.4–60.1)	56.1	(51.2–61.0)	58.1	(53.0–63.1)	1.3	2.4	0.667
Pennsylvania	62.2	(59.1–65.3)	64.2	(60.5–67.8)	64.3	(60.4–68.1)	2.1	3.3	0.412
Rhode Island	63.9	(60.0–67.6)	63.5	(58.6–68.1)	58.1	(53.8–62.2)	-5.8	-9.1	0.045
South Carolina	69.3	(65.7–72.7)	69.3	(65.5–72.8)	65.7	(61.9–69.3)	-3.6	-5.2	0.163
South Dakota	60.2	(56.4–63.9)	60.0	(56.3–63.6)	57.8	(53.1–62.3)	-2.4	-4.0	0.429
Tennessee	75.5	(68.5–81.4)	72.3	(66.8–77.1)	74.1	(66.8–80.3)	-1.4	-1.9	0.769
Texas	60.3	(56.2–64.3)	64.7	(61.9–67.3)	61.5	(58.2–64.7)	1.2	2.0	0.641
Utah	56.2	(51.4–60.8)	54.0	(48.9–59.0)	54.5	(51.2–57.7)	-1.7	-3.0	0.563
Vermont	57.6	(54.2–60.9)	62.3	(56.0–68.2)	55.6	(51.7–59.4)	-2.0	-3.5	0.445
Virginia	64.2	(59.2–69.0)	64.5	(59.5–69.2)	64.9	(59.6–69.9)	0.7	1.1	0.844
Washington	55.7	(53.5–57.8)	56.3	(54.3–58.3)	55.4	(52.8–57.9)	-0.3	-0.5	0.875
West Virginia	65.6	(62.0–69.1)	72.2	(67.4–76.5)	70.5	(66.0–74.5)	4.9	7.4	0.089
Wisconsin	62.1	(57.3–66.7)	59.1	(54.9–63.2)	59.4	(54.8–63.8)	-2.7	-4.4	0.416
Wyoming	60.2	(55.2–64.9)	59.9	(55.0–64.7)	55.0	(51.6–58.4)	-5.2	-8.6	0.087

Abbreviation: CI = confidence interval.

* In this report, persons identified as Hispanic might be of any race. Persons identified as black, white, Asian/Pacific Islander, or American Indian/Alaska Native are non-Hispanic. The five racial/ethnic categories are mutually exclusive.

CDC's National Heart Disease and Stroke Prevention Program works to increase prevention and control of high blood pressure through sodium reduction, health system strategies such as collection and use of quality measures, promotion of team-based care, and community-clinical linkages.

In addition, the Million Hearts initiative, a public and private partnership co-led by CDC and the Centers for Medicare and Medicare Services, targets blood pressure control and seeks to align and coordinate resources across community and clinical settings (*10*). Increasing awareness of hypertension, improving hypertension control, and encouraging adherence to evidence-based practices addressing hypertension are needed, especially in those states with higher prevalence of hypertension and lower proportion of use of antihypertensive medications.

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Blood Lead Levels in Children Aged 1–5 Years — United States, 1999–2010

The adverse health effects of lead exposure in children are well described and include intellectual and behavioral deficits, making lead exposure an important public health problem (*1*). No safe blood lead level (BLL) in children has been identified. To estimate the number of children aged 1–5 years in the United States at risk for adverse health effects from lead exposure and to assess the impact of prevention efforts, CDC analyzed data from the National Health and Nutrition Examination Survey (NHANES) from the periods 1999–2002 to 2007–2010. This report summarizes the results of that analysis, which indicated that the percentage of children aged 1–5 years with BLLs at or above the upper reference interval value of 5 μg/dL calculated using the 2007–2010 NHANES cycle was 2.6%. Thus, an estimated 535,000 U.S. children aged 1–5 years had BLLs ≥5 μg/dL based on the U.S. Census Bureau 2010 count of the number of children in this age group. Despite progress in reducing BLLs among children in this age group overall, differences between the mean BLLs of different racial/ethnic and income groups persist, and work remains to be done to reach the *Healthy People 2020* objective of reducing mean BLLs for all children in the United States (EH-8.2) (*2*).

In 1991, CDC defined BLLs ≥10 μg/dL as the "level of concern" for children aged 1–5 years (*3*). However, in May 2012, CDC accepted the recommendations of its Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) that the term "level of concern" be replaced with an upper reference interval value defined as the 97.5th percentile of BLLs in U.S. children aged 1–5 years from two consecutive cycles of NHANES (*4*). CDC conducts NHANES, a continuous, cross-sectional, representative survey of the noninstitutionalized U.S. civilian population, using a complex, multistage probability design. Since the mid-1970s, when NHANES first began measuring blood lead levels, the survey has become the basis for monitoring changes in BLLs in the United States. Beginning in 1999, NHANES became a continuous survey, with roughly 10,000 NHANES participants interviewed and examined during each 2-year cycle. Approximately 1,240 children aged 1–5 years are examined every cycle, and a blood specimen is drawn from approximately 850 (69%) of them. In NHANES, BLL is measured using inductively coupled plasma mass spectrometry in the elemental analysis laboratory at CDC (*5*). The current upper reference interval value of the 97.5th percentile of the distribution of the combined 2007–2008 and 2009–2010 cycles of NHANES was calculated as 5 μg/dL.

For this analysis, a BLL ≥5 μg/dL is defined as a high BLL. The geometric mean (GM) BLLs for children aged 1–5 years and 95% confidence intervals (CIs) also were calculated. Data are presented in 4-year aggregates from the 1999–2002, 2003–2006, and 2007–2010 NHANES cycles. Significant differences in GM between categories in selected characteristics were tested using pairwise *t*-tests. Values below the BLL limit of detection were replaced with the limit of detection divided by the square root of 2, and all data analyses included sample weights to account for unequal probabilities of selection, oversampling, and survey nonresponse (*6*).

This analysis was focused on demographic categories with long-standing disparities in risk for high BLLs between groups: age, sex, race/ethnicity, age of housing, poverty income ratio (PIR), and Medicaid enrollment status. Race/ethnicity was categorized as non-Hispanic white, non-Hispanic black, Mexican American, and "other." Although children whose race/ethnicity was categorized as "other" were included in overall estimates, they were excluded from estimates stratified by race/ethnicity because of small numbers. PIR was calculated by dividing the total annual family income by the federal poverty threshold specific to family size, year, and state of residence. PIR was categorized as either <1.3 or ≥1.3 times the poverty level.

In bivariate analyses, the CI for the 2007–2010 NHANES estimates of the percentage of non-Hispanic black children (3.3%–8.4%) and non-Hispanic white children (0.7%–5.2%) with BLLs ≥5 μg/dL overlap (Table 1). However, disparities in the GM BLL by factors such as race/ethnicity and income level, which have been important historically, persist. The difference between the GM BLL of non-Hispanic black children (1.8 μg/dL [CI = 1.6–1.9]) GM BLL compared with either non-Hispanic white (1.3 μg/dL [CI = 1.1–1.4]) or Mexican American (1.3 μg/dL [CI = 1.2–1.4]) children remains significant ($p<0.01$) (Table 2). The difference in GM BLL among children belonging to families with a PIR <1.3 compared with families with a PIR ≥1.3 also is significant (1.6 μg/dL versus 1.2 μg/dL, respectively [$p<0.01$]), as is the difference in GM BLL by age group and Medicaid enrollment status (Table 2).

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TABLE 1. Number sampled and estimated percentage of children aged 1–5 years with blood lead levels ≥5 μg/dL, by selected characteristics — United States, National Health and Nutrition Examination Survey, 1999–2002, 2003–2006, and 2007–2010

Characteristic	1999–2002			2003–2006			2007–2010		
	No.	%	(95% CI)	No.	%	(95% CI)	No.	%	(95% CI)
Total	**1,621**	**8.6**	**(6.3–11.3)**	**1,879**	**4.1**	**(2.8–5.7)**	**1,653**	**2.6**	**(1.6–4.0)**
Sex									
Boy	851	9.1	(5.9–12.9)	951	3.9	(2.4–5.8)	872	2.5	(1.3–4.1)
Girl	770	8.2	(6.0–10.6)	928	4.3	(2.9–5.9)	781	2.8	(1.6–4.2)
Age group (yrs)									
1–2	779	12.2	(9.1–15.6)	919	5.7	(4.3–7.2)	793	3.1	(2.1–4.4)
3–5	842	6.4	(3.8–9.6)	960	3.0	(1.5–5.1)	860	2.3	(0.9–4.4)*
Race/Ethnicity									
Black, non-Hispanic	454	18.5	(13.7–23.8)	546	12.1	(6.5–19.2)	338	5.6	(3.3–8.4)
Mexican American	541	7.4	(4.7–10.6)	611	2.6	(1.1–4.6)	490	1.9	(0.7–3.7)*
White, non-Hispanic	465	7.1	(3.7–11.5)	540	2.3	(1.4–3.2)	536	2.4	(0.7–5.2)*
Poverty income ratio									
<1.3	817	12.9	(9.5–16.7)	941	8.1	(5.2–11.6)	868	4.4	(3.0–6.2)
≥1.3	677	4.5	(2.6–6.7)	852	1.6	(0.7–2.9)*	642	1.2	(0.1–3.7)*
Age of housing									
Pre-1950	208	18.4	(13.1–24.4)	242	8.8	(5.3–13.2)	264	5.3	(1.1–12.6)*
1950–1977	341	5.3	(2.9–8.4)	413	2.2	(0.8–4.3)*	343	1.3	(0.6–2.4)*
1978 or later	470	2.1	(0.9–3.7)*	528	1.4	(0.6–2.4)*	503	0.4	(0.1–1.0)*
Refused/Don't know	602	15.0	(10.7–19.9)	696	7.5	(3.6–12.6)	543	5.1	(3.3–7.4)
Medicaid enrollment status									
Yes	592	15.1	(11.5–19.1)	740	7.1	(4.5–10.1)	633	4.3	(2.8–6.1)
No	998	6.0	(3.9–8.5)	1,127	2.9	(1.9–4.0)	1,019	2.0	(0.9–3.4)*

Abbreviation: CI = confidence interval.
* Estimate is statistically unreliable (relative standard error is ≥30).

Editorial Note

Substantial progress has been made over the past four decades in reducing the number of children with elevated BLLs. Data from the 1976–1980 cycle of NHANES indicated that an estimated 88% of children aged 1–5 years had BLLs ≥10 μg/dL (*7*). Since then, the percentage has fallen sharply, to 4.4% during 1991–1994 (NHANES III) (*8*), to 1.6% during 1999–2002 (*9*), and to 0.8% during 2007–2010. National estimates of the GM BLL for children aged 1–5 years declined significantly over time, from a 1976–1980 estimated GM BLL of 15 μg/dL (CI = 14.2–15.8) to a 1988–1991 estimated GM BLL 3.6 μg/dL (CI = 3.3–4.0), and this trend continues. During 1999–2002, the GM BLL was 1.9 μg/dL (CI = 1.8–2.1), compared with the 2007–2010 estimated GM BLL of 1.3 μg/dL (CI = 1.3–1.4).*

The greatest reductions have occurred among children in racial/ethnic and income groups that historically were most likely to have BLLs ≥10 μg/dL. These reductions reflect the impact of strategies coordinated and implemented at national, state, and local levels. They include elimination of lead in vehicle emissions, elimination of lead paint hazards in housing, reduction in lead concentrations in air, water, and consumer products marketed to children, and identification and increased screening of populations at high risk (*3*). However, the small

*Where CIs are equal to the point estimate, this is because of rounding.

What is already known on this topic?

Elevated blood lead levels (BLLs) in children cause learning and behavioral deficits. No threshold for these effects has been identified. In January 2012, CDC's Advisory Committee on Childhood Lead Poisoning recommended that BLLs in children be kept below 5 μg/dL.

What is added by this report?

The percentage of children aged 1–5 years with BLLs ≥5 μg/dL from the 2007–2010 National Health and Nutritional Examination Survey cycle was 2.6%, indicating an estimated 535,000 U.S. children aged 1–5 years with BLLs ≥5 μg/dL. Despite progress in reducing BLLs among children in this age group overall, long-standing disparities persist. The geometric mean BLLs (GM BLLs) among younger children, those belonging to poor families, and those enrolled in Medicaid were significantly higher compared with their older, more affluent counterparts, while the GM BLL for non-Hispanic black children was significantly higher compared with either non-Hispanic white or Mexican American children.

What are the implications for public health practice?

The greatest reductions in the proportion of children with elevated BLLs have been made over the past four decades in those racial/ethnic and income groups that had the highest BLLs. Persistent differences between the mean BLLs of different racial/ethnic and income groups can be traced to differences in housing quality, environmental conditions, nutrition, and other factors. Resources should be targeted to areas and communities where children are most at risk to achieve the *Healthy People 2020* objective of reducing mean BLLs for all children in the United States (EH 8.2).

TABLE 2. Number sampled and estimated geometric mean blood lead levels (GM BLLs) of children aged 1–5 years, by selected characteristics — United States, National Health and Nutrition Examination Survey, 1999–2002, 2003–2006, and 2007–2010

Characteristic	1999–2002			2003–2006			2007–2010		
	No.	GM BLL (μg/dL)	(95% CI)	No.	GM BLL (μg/dL)	(95% CI)	No.	GM BLL (μg/dL)	(95% CI)
Total	**1,621**	**1.9**	**(1.8–2.1)**	**1,879**	**1.6**	**(1.5–1.7)**	**1,653**	**1.3**	**(1.3–1.4)***
Sex									
Boy	851	1.9	(1.8–2.1)	951	1.6	(1.5–1.7)	872	1.3	(1.3–1.4)*
Girl	770	1.9	(1.8–2.1)	928	1.6	(1.5–1.7)	781	1.3	(1.2–1.4)
Age group (yrs)									
1–2	779	2.2	(2.0–2.4)	919	1.8	(1.7–1.9)	793	1.5	(1.4–1.6)
3–5	842	1.8	(1.6–2.0)	960	1.5	(1.4–1.6)	860	1.2	(1.2–1.3)*
Race/Ethnicity									
Black, non-Hispanic	454	2.8	(2.5–3.1)	546	2.4	(2.1–2.8)	338	1.8	(1.6–1.9)
Mexican American	541	1.9	(1.8–2.0)	611	1.6	(1.5–1.7)	490	1.3	(1.2–1.4)
White, non-Hispanic	465	1.8	(1.6–2.0)	540	1.5	(1.4–1.5)*	536	1.3	(1.1–1.4)
Poverty income ratio									
<1.3	817	2.4	(2.2–2.7)	941	2.0	(1.8–2.2)	868	1.6	(1.5–1.7)
≥1.3	677	1.6	(1.4–1.7)	852	1.4	(1.3–1.5)	642	1.2	(1.1–1.3)
Age of housing									
Pre-1950	208	2.7	(2.4–3.1)	242	2.1	(1.8–2.3)	264	1.6	(1.4–1.9)
1950–1977	341	1.8	(1.7–2.0)	413	1.5	(1.4–1.7)	343	1.3	(1.2–1.5)
1978 or later	470	1.5	(1.3–1.6)	528	1.3	(1.2–1.4)	503	1.1	(1.0–1.2)
Refused/Don't know	602	2.5	(2.2–2.7)	696	2.0	(1.8–2.3)	543	1.6	(1.5–1.7)
Medicaid enrollment status									
Yes	592	2.6	(2.4–2.8)	740	2.0	(1.8–2.2)	633	1.6	(1.5–1.7)
No	998	1.7	(1.6–1.9)	1,127	1.5	(1.4–1.6)	1,019	1.2	(1.2–1.3)*

Abbreviation: CI = confidence interval.
* Where CIs are equal to the point estimate, this is because of rounding.

numbers of NHANES participants with BLLs ≥10 μg/dL means that national estimates of the prevalence of BLLs this high are unstable, and year-to-year changes in prevalence are difficult to interpret. In the 2007–2008 and 2009–2010 NHANES cycles, nine and six survey participants, respectively, aged 1–5 years had BLLs ≥10 μg/dL.

Childhood exposure to lead can have lifelong consequences. The significant differences between the GM BLLs by race/ethnicity and income indicate a persistent disparity. In January 2012, ACCLPP observed that these disparities can be traced to differences in housing quality, environmental conditions, nutrition, and other factors designed to control or eliminate lead exposure (*4*).

CDC concurred with ACCLPP that primary prevention (i.e., ensuring that all homes are lead-safe and do not contribute to childhood lead exposure) is the only practical approach to preventing elevated BLLs in children (*10*). Prevention requires reducing environmental exposures from soil, dust, paint, and water, before children are exposed to these hazards. Efforts to increase awareness of lead hazards and nutritional interventions to increase iron and calcium, which can reduce lead absorption, are other key components of a successful prevention policy (*4*). Given the continued disparity in BLLs, resources should be targeted to those areas where children are most at risk. NHANES provides useful data for measuring progress towards eliminating high BLLs and ensuring that resources are targeted toward the most vulnerable children.

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Vital Signs: Repeat Births Among Teens — United States, 2007–2010

On April 2, 2013, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Abstract

Background: Teen childbearing has potential negative health, economic, and social consequences for mother and child. Repeat teen childbearing further constrains the mother's education and employment possibilities. Rates of preterm and low birth weight are higher in teens with a repeat birth, compared with first births.

Methods: To assess patterns of repeat childbearing and postpartum contraceptive use among teens, CDC analyzed natality data from the National Vital Statistics System (NVSS) and the Pregnancy Risk Assessment Monitoring System (PRAMS) from 2007–2010.

Results: Based on 2010 NVSS data from all 50 states and the District of Columbia, of more than 367,000 births to teens aged 15–19 years, 18.3% were repeat births. The percentage of teen births that represented repeat births decreased by 6.2% between 2007 and 2010. Disparities in repeat teen births exist by race/ethnicity, with the highest percentages found among American Indian/Alaska Natives (21.6%), Hispanics (20.9%), and non-Hispanic blacks (20.4%) and lowest among non-Hispanic whites (14.8%). Wide geographic disparities in the percentage of teen births that were repeat births also exist, ranging from 22% in Texas to 10% in New Hampshire. PRAMS data from 16 reporting areas (15 states and New York City) indicate that 91.2% of teen mothers used a contraceptive method 2–6 months after giving birth, but only 22.4% of teen mothers used the most effective methods. Teens with a previous live birth were significantly more likely to use the most effective methods postpartum compared with those with no prior live birth (29.6% versus 20.9%, respectively). Non-Hispanic white and Hispanic teens were significantly more likely to use the most effective methods than non-Hispanic black teens (24.6% and 27.9% versus 14.3%, respectively). The percentage of teens reporting postpartum use of the most effective methods varied greatly geographically across the PRAMS reporting areas, ranging from 50.3% in Colorado to 7.2% in New York State.

Conclusions: Although the prevalence of repeat teen birth has declined in recent years, nearly one in five teen births is a repeat birth. Large disparities exist in repeat teen births and use of the most effective contraceptive methods postpartum, which was reported by fewer than one out of four teen mothers.

Implications for Public Health Practice: Evidence-based approaches are needed to reduce repeat teen childbearing. These include linking pregnant and parenting teens to home visiting and similar programs that address a broad range of needs, and offering postpartum contraception to teens, including long-acting methods of reversible contraception.

Introduction

Although teen birth rates have been declining for the last two decades, in 2010, more than 367,000 teens aged 15–19 years gave birth (*1*). Teen childbearing has potential negative health, economic, and social consequences for mothers and their children (*1,2*), and each year teen childbearing costs the United States approximately $11 billion (*3*). In response, the U.S. government has set a *Healthy People 2020* objective for reducing teen pregnancy rates (*4*).

Repeat teen birth (defined here as having two or more pregnancies resulting in a live birth before age 20 years) poses greater challenges because additional births might further constrain the mother's ability to attend school and obtain job experience (*5*). Closely spaced births also have health consequences for the infant (*6*). For example, 17.0% of infants who were second teen births were born preterm in 2010, compared with 12.6% for first births; 11% of second teen births were low birth weight, compared with 9% of first births (*1,7*).

Given that most pregnant teens come into contact with the health-care system while receiving prenatal care (*8*), opportunities exist to help them prevent subsequent pregnancies in their teen years. The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists recommend counseling women about birth spacing and contraceptive use during pregnancy (*9,10*). Research among teen mothers has

shown that prenatal counseling is associated with an increased likelihood of using contraception and of using more effective methods (*11*), and that use of effective methods is associated with reduced rates of repeat teen pregnancy (*12*). Home visiting and similar programs that provide broad-based support to pregnant and parenting teens have been shown to reduce repeat teen pregnancy (*13*).

To assess patterns of repeat teen childbearing and postpartum contraceptive use, CDC analyzed data from the natality files of the National Vital Statistics System (NVSS), and the Pregnancy Risk Assessment Monitoring System (PRAMS). Specific research questions included the following:

1) What number and percentage of teen births are repeat births?
2) What are patterns of repeat teen births by race/ethnicity, by state, and over time?
3) What are current patterns of postpartum contraceptive use among teen mothers, by sociodemographic characteristics and by state?

Methods

Vital Statistics/Birth Data

U.S. natality files are compiled annually by CDC's National Center for Health Statistics and include demographic information such as maternal age, race, and Hispanic origin for all births in the United States in all states and the District of Columbia. This report includes national and state-specific data for 2007–2010 (*7*). For the analyses, births to females aged 15–19 years for which information about the number of prior pregnancies ending in a live birth was not available (less than 1% of births in 2010) were excluded, leaving 364,859 births for these analyses.

PRAMS

To examine contraceptive methods used by teen mothers postpartum, CDC analyzed data from the Pregnancy Risk Assessment Monitoring System (PRAMS) (*14*). PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during, and after pregnancy. In each participating state, a stratified random sample of mothers with a recent live birth is selected from the birth files and, using a standardized protocol, women are surveyed by mail 2–6 months after the birth of their child, with telephone follow-up as needed. PRAMS data are weighted for sample design, nonresponse, and noncoverage using birth certificate data provided by vital statistics agencies in the participating states, to produce an analysis dataset representative of the state birth population. The analysis in this report included data from 2007–2010 from a subset of 16 reporting areas (15 states* and New York City, representing 28% of all live births) that had PRAMS data necessary to conduct the analysis, and a weighted response rate ≥65%.

All respondents were asked, "Are you or your husband or partner doing anything *now* to keep from getting pregnant?" If the response was no, the mother was asked the reason from a list of response choices, with instructions to "check all that apply." If the response was yes, respondents were asked to check all applicable responses to the question, "What kind of birth control are you or your husband or partner using *now* to keep from getting pregnant?" Contraceptive methods were categorized by level of effectiveness for pregnancy prevention based on the percentage of females who experience pregnancy during the first year of typical use and coded in a manner consistent with previous analyses of contraceptive use as most effective (<1%), moderately effective (6%–12%), and less effective (≥18%) (*15*). Only the most effective method listed by the respondent was used in the categorizations. The *most effective* methods included tubal ligation, vasectomy, implant, and intrauterine device; *moderately effective* included oral contraceptive pills, injectable medroxyprogesterone (e.g., Depo-Provera), birth control patch, and vaginal ring; and *less effective* included condom, diaphragm, cervical cap, contraceptive sponge, rhythm method, and withdrawal during typical use. Although the diaphragm has been categorized elsewhere as moderately effective during typical use (*15*), for this report, that method was categorized as less effective because the PRAMS question combines diaphragm/cap/sponge as a single response option, making it impossible to determine which method was used. However, the eight teens reporting use of a diaphragm also reported use of another contraceptive method with a higher level of effectiveness.

Weighted prevalences were calculated using statistical software to account for the complex sampling design and nonresponse. Weighted results were calculated for female teens aged <20 years whose pregnancy resulted in a live birth. The sample included teen mothers who recently had delivered their first child and were at risk for having a second birth, as well as teen mothers who recently had delivered a subsequent child and were at risk for having a third or higher order birth. Analyses examining the typical use effectiveness of contraceptive methods and reasons for nonuse of contraception excluded teen mothers who were not at risk for pregnancy, either because they currently were pregnant or were not sexually active. The

* States included Arkansas, Colorado, Michigan, Missouri, Mississippi, North Carolina, Nebraska, New York (excluding New York City), Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Utah, and West Virginia.

prevalence of self-reported contraceptive use postpartum was estimated by select demographic characteristics and reasons for not using contraception were characterized.

Results

Vital Statistics

In 2010, among 364,859 births to teens aged 15–19 years, 66,761 (18.3%) represented repeat births. The vast majority (85.7%) of repeat births were for a second child (57,206 of 66,761), but some teens (12.6%) were giving birth to a third child (8,397), and a few births (1.7%) were for a fourth to sixth child (1,158). The percentage of teen births that represented repeat births decreased gradually over the observation period, from 19.5% in 2007 to 18.3% in 2010, for a 6.2% decline over the 4-year period.

The prevalence of repeat teen births varied by race/ethnicity, with the highest prevalence in 2010 among American Indian/Alaska Natives (21.6%), followed by Hispanics (20.9%), non-Hispanic blacks (20.4%), Asian or Pacific Islanders (17.6%), and non-Hispanic whites (14.8%). The prevalence of repeat teen births also varied by state (Figure). The highest prevalence (22%) was found in Texas, while the lowest prevalence (10%) was found in New Hampshire. In eight southern and western states (Arizona, Arkansas, Georgia, Louisiana, Mississippi, Nevada, Oklahoma, and Texas,), ≥20% of all teen births to females aged 15–19 years were repeat births. Conversely, in seven mostly northeastern states (Connecticut, Maine, Massachusetts, New Hampshire, New York, Vermont, and Wyoming) <15% of all teen births were repeat births.

PRAMS

Among postpartum teen mothers from the participating PRAMS reporting areas, 8.0% were not sexually active (95% confidence interval [CI] = 6.9%–9.2%), 1.3% were pregnant (CI = 0.9%–1.9%), and 90.7% were sexually active (CI = 89.4%–91.9%). Teen mothers with a repeat birth were as likely as teen mothers with a first birth to report the birth was unintended (72.7% [CI = 68.0%–77.0%] versus 72.6% [CI = 70.3%–74.7%], respectively), and to report using contraception in the prepregnancy period before the birth (48.8% [CI = 43.1%–54.6%] versus 45.6% [CI = 42.9%–48.3%], respectively).

Of teen mothers who were sexually active, 91.2% reported using postpartum contraception after the most recent birth. Among sexually active teen mothers, 22.4% used the most effective birth control methods, 54.2% used moderately effective methods, 14.5% used less effective methods, and 8.8% used no method (Table 1). Teens with a previous live birth were significantly more likely to use the most effective methods compared with those with no prior live birth (29.6% versus 20.9%) (Table 1). Non-Hispanic white and Hispanic teens were significantly more likely to use the most effective methods than Non-Hispanic black teens (24.6% and 27.9% versus 14.3%, respectively (Table 1). Usage also differed somewhat by age, with teens aged ≤17 years more likely than teens aged 18–19 years to use moderately effective methods (60.4% versus 51.4%), and less likely to use the less effective methods (11.2% versus 16.0%); however, there were no significant differences in use of the most effective methods. Use of the most effective methods did not differ significantly between married and other teens; however, married teens were less likely to use moderately effective methods (41.6% versus 56.4%); and more likely to use no method (15.9% versus 7.6%), which could reflect pregnancy intendedness among married teens.

Postpartum use of effective contraception among teen mothers also varied markedly by location (Table 1). Of the 16 PRAMS reporting areas in the sample, Colorado had the highest percentage of teen mothers reporting use of the most effective birth control methods postpartum (50.3%), compared with New York State (excluding New York City), which had the lowest percentage (7.2%) (Table 1). New York City reported the highest percentage of no birth control use postpartum (19.2%), while South Carolina reported the lowest percentage (4.1%) (Table 1).

Among teen mothers who used contraception postpartum, more than one out of every five respondents reported using long-acting reversible contraception (LARC), with 18.2% reporting intrauterine device use and 3.3% reporting implant use (Table 2). Use of oral contraceptive pills and the shot (Depo Provera) was reported by 29.2% and 21.0% of teen mothers postpartum, respectively. Among respondents, 12.3% reported using condoms as their method of preventing pregnancy.

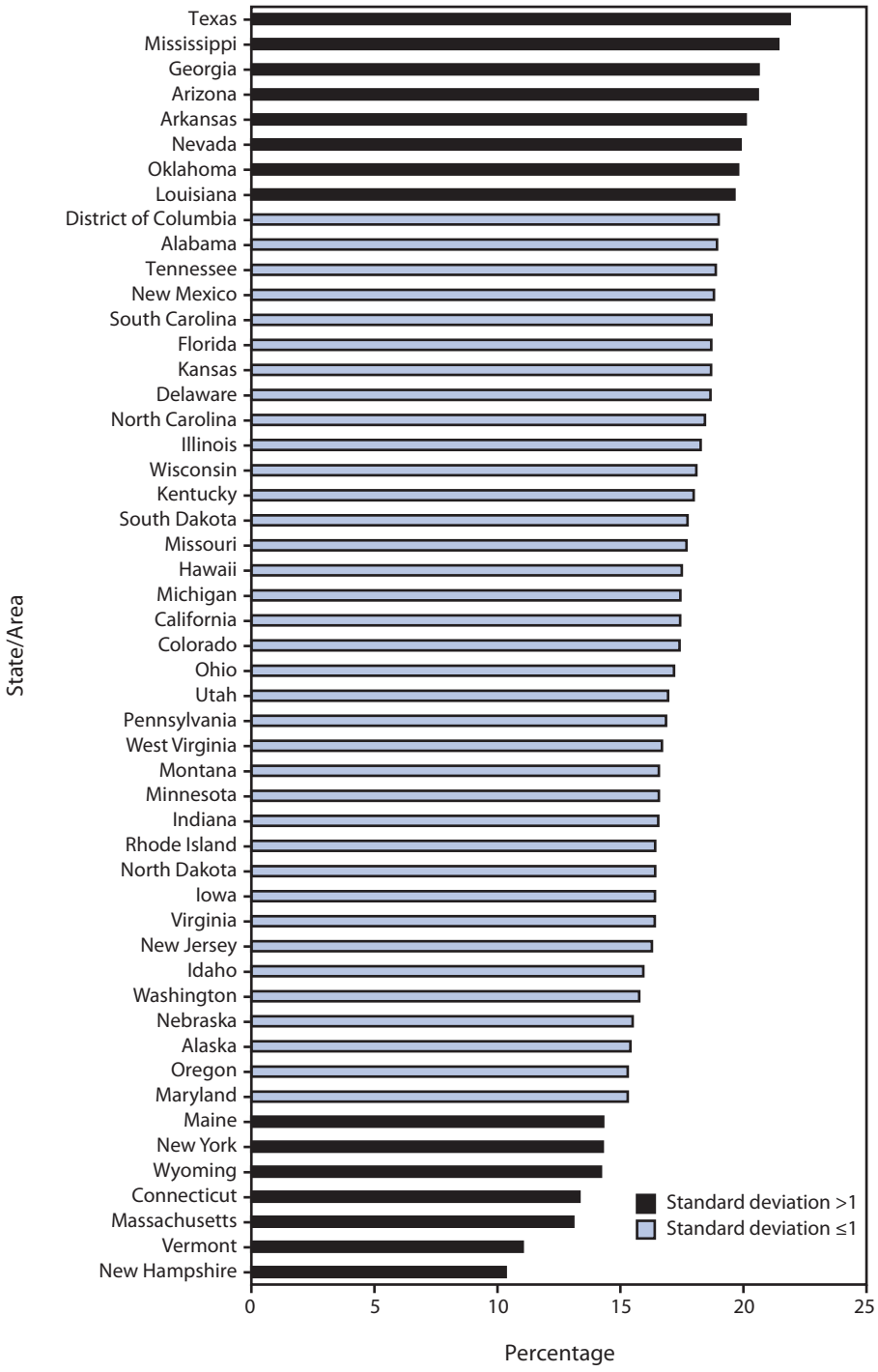
Among the 9% of sexually active teen mothers who did not use birth control after their most recent birth, the most frequently cited reasons for nonuse included not wanting to use birth control (36.0% [CI = 28.7%–44.0%]), husband/partner objections (21.7% [CI = 15.9%–28.9%]), not being able to pay for birth control (20.0% [CI = 14.5%–26.8%]), and wanting to get pregnant (17.6% [CI = 12.1%–24.9%]).

Conclusions and Comment

This report documents that nearly one in five teen births in 2010 was a repeat birth. The percentage of teen births that were repeat births has decreased 6.2%, from 19.5% in 2007 to 18.3% in 2010. The prevalence of repeat teen births varied by race/ethnicity, and mirrored racial/ethnic disparities in the overall teen birth rates with Hispanics, non-Hispanic blacks, and American Indian/Alaska Natives experiencing the highest rates (*1*).

This report also examined postpartum contraceptive use, a proximal determinant of the risk for a repeat teen birth. Overall,

FIGURE. Percentage of births* among females aged 15–19 years that were repeat births, by state/area — United States, 2010



* Excludes births for which the birth order was not known.

91% of teens with a recent live birth reported using contraception postpartum; this represents a substantial increase from the 45%–50% of teens with a recent live birth who reported using contraception in the prepregnancy period. This percentage also is similar to the percentage of all sexually active female teens (85.6%) who reported use of a method of birth control at last sex (*16*). More than three quarters of sexually active teen mothers used one of the most or moderately effective contraceptive methods postpartum, and teen mothers were more likely to use LARC than all sexually active teens (21.5% versus 4.5%) (*17*). Of note, a previous report of PRAMS data from seven states in 2006–2008 showed only 12% of teen mothers were using LARC (*11*). The more recent data from 16 PRAMS reporting areas suggest that an increasing percentage of teen mothers are actively attempting to prevent another pregnancy in the postpartum period through use of the most effective methods of contraception.

Another way to reduce repeat teen pregnancy is to engage pregnant and parenting teens in programs that are effective in reducing repeat teen births. Several studies have shown that home visiting can help reduce repeat teen pregnancy (*5,13*). The U.S. Department of Health and Human Services (HHS) Maternal and Child Health Bureau helps states and local agencies deliver evidence-based home visiting programs.[†] The HHS Office of Adolescent Health's Pregnancy Assistance Fund (PAF) Resource and Training Center also provides information and tools for use by those working with pregnant and parenting teens.[§]

Efforts to support pregnant and parenting teens should include counseling about birth spacing and contraception and, among women wishing to delay or avoid future pregnancies, the importance of sustaining contraceptive use over time, in accordance with recommendations from professional organizations such as the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (*9,10*). LARC methods are safe and effective for most teens (*18*). Given that teens are at a high risk for inconsistent use of methods that are user-dependent (e.g.,

[†] Additional information about home visiting is available at http://mchb.hrsa.gov/programs/homevisiting.

[§] The HHS Office of Adolescent Health's Pregnancy Assistance Fund Resource and Training Center provides information to those working with pregnant and parenting teens. Additional information is available at http://www.hhs.gov/ash/oah/oah-initiatives/paf.

TABLE 1. Postpartum contraceptive use among nonpregnant, sexually active females aged <20 years who delivered live infants, by selected characteristics — 15 states and New York City, Pregnancy Risk Assessment Monitoring System (PRAMS), 2007–2010

Characteristic	No. in sample*	%†	Most effective§		Moderately effective¶		Less effective**		No method	
			%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Total	**5,708**	**100.0**	**22.4**	**(20.6–24.3)**	**54.2**	**(51.9–56.5)**	**14.5**	**(13.0–16.2)**	**8.8**	**(7.6–10.3)**
Previous live birth										
Yes	1,026	17.3	29.6	(24.9–34.8)	44.5	(39.2–50.0)	16.6	(13.0–20.9)	9.3	(6.5–13.3)
No	4,656	82.7	20.9	(19.0–23.0)	56.1	(53.6–58.6)	14.2	(12.5–16.1)	8.8	(7.4–10.4)
Race/Ethnicity										
White, non-Hispanic	2,673	56.9	24.6	(21.9–27.4)	53.1	(49.8–56.3)	13.0	(11.0–15.4)	9.3	(7.6–11.4)
Black, non-Hispanic	1,540	25.3	14.3	(11.7–17.4)	63.7	(59.6–67.7)	15.6	(12.7–19.1)	6.3	(4.4–8.9)
Hispanic	1,009	17.8	27.9	(23.6–32.6)	44.0	(38.8–49.4)	17.5	(13.8–21.9)	10.6	(7.7–14.4)
Age (yrs)										
≤17	1,795	31.9	20.7	(17.7–24.2)	60.4	(56.3–64.3)	11.2	(9.0–14.0)	7.7	(5.7–10.2)
18–19	3,913	68.1	23.2	(21.0–25.6)	51.4	(48.6–54.1)	16.0	(14.1–18.2)	9.4	(7.9–11.2)
Marital status										
Married	873	14.5	26.7	(21.9–32.1)	41.6	(36.1–47.4)	15.8	(12.4–19.9)	15.9	(12.0–20.9)
Other	4,830	85.5	21.7	(19.7–23.8)	56.4	(53.9–58.8)	14.3	(12.6–16.2)	7.6	(6.4–9.1)
State/City††										
Arkansas	829	8.2	17.7	(14.3–21.7)	53.8	(49.0–58.6)	16.4	(13.2–20.3)	12.0	(9.2–15.6)
Colorado (2009, 2010)	295	4.6	50.3	(42.0–58.6)	35.2	(27.9–43.2)	9.0	(5.4–14.6)	5.5	(2.7–10.8)
Michigan	678	19.9	20.2	(16.6–24.4)	59.5	(54.7–64.1)	13.2	(10.4–16.7)	7.1	(5.0–10.1)
Missouri (2007)	126	3.3	15.5	(9.2–25.0)	67.0	(57.0–75.6)	11.1	(6.9–17.4)	6.4	(3.4–11.8)
Mississippi (2008)	235	2.7	15.8	(10.8–22.6)	68.2	(60.2–75.2)	6.9	(3.7–12.5)	9.1	(5.4–14.9)
North Carolina (2007, 2008)	303	11.8	24.9	(19.4–31.5)	48.2	(41.3–55.2)	17.4	(12.7–23.4)	9.4	(6.0–14.5)
Nebraska	514	2.9	27.8	(23.2–32.8)	47.7	(42.2–53.2)	15.2	(11.8–19.4)	9.3	(6.4–13.3)
New York (2007, 2008)§§	112	7.0	7.2	(3.2–15.6)	70.2	(57.9–80.2)	14.1	(7.3–25.5)	8.4	(3.7–17.9)
New York City (2007)	81	3.4	11.9	(5.1–25.4)	43.9	(31.0–57.6)	25.0	(14.9–38.9)	19.2	(10.6–32.3)
Ohio (2009, 2010)	249	11.0	23.5	(16.6–32.1)	55.1	(46.1–63.9)	14.5	(9.4–21.7)	6.9	(3.2–14.2)
Oregon	554	5.9	33.8	(27.6–40.6)	43.5	(36.8–50.3)	15.1	(10.9–20.6)	7.6	(5.0–11.4)
Rhode Island	406	1.7	36.4	(31.0–42.2)	44.4	(38.7–50.3)	10.4	(7.4–14.5)	8.8	(6.0–12.6)
South Carolina (2007)	184	3.1	15.5	(8.5–26.7)	64.1	(51.4–75.1)	16.2	(8.9–27.7)	4.1	(1.3–11.9)
Tennessee (2008, 2009)	177	9.8	20.7	(13.9–29.5)	54.0	(44.5–63.3)	13.0	(7.9–20.7)	12.3	(7.2–20.2)
Utah (2009, 2010)	249	2.8	40.3	(33.8–47.2)	34.0	(27.7–41.0)	18.8	(13.9–24.9)	6.9	(4.3–10.9)
West Virginia (2007, 2008)	716	1.9	11.2	(8.5–14.6)	63.1	(58.4–67.6)	13.8	(10.9–17.4)	11.8	(9.0–15.4)

Abbreviation: CI = confidence interval.

* Unweighted sample totals from 5,708 females age <20 years responding that they were not pregnant and were sexually active. If more than one method of contraception was reported, only the method with the highest effectiveness during typical use was included.

† Percentages based on weighted data; totals might not sum to 100% because of rounding or missing data for some categories.

§ Includes tubal ligation, vasectomy, implant, and intrauterine device. Effectiveness determined by the percentage of females who experience pregnancy during first year of typical use; categorized as most effective (<1%), moderately effective (6%–12%), and less effective (≥18%).

¶ Includes oral contraceptive pills, injectable medroxyprogesterone (e.g., Depo-Provera, also known as the birth control shot), birth control patch, and vaginal ring.

** Includes condom, diaphragm, cervical cap, contraceptive sponge, rhythm method, and withdrawal.

†† The following sites did not have complete data for all years of 2007–2010: Colorado, Missouri, Mississippi, North Carolina, New York, Ohio, South Carolina, Tennessee, Utah, West Virginia, and New York City; the year(s) in parentheses indicates for which year(s) data were available for these states. New York City did have complete data in 2010, but was excluded from this year's analysis because the list of contraceptive method types was modified and did not correspond to the other states and years.

§§ Excluding New York City.

condoms and oral contraceptive pills), LARC methods might be a suitable option because they are user independent and require no effort after insertion (*19*). However, teens face a number of barriers to LARC use, including cost, limited availability, lack of provider acceptance for this practice in teens, and teen lack of awareness of these methods (*20*). Counseling about birth spacing and contraception during pregnancy and offering LARC in the immediate postpartum period while in the hospital after delivery are examples of how to successfully facilitate contraceptive access for teen mothers. In addition, consistent and correct condom use should be encouraged to prevent sexually transmitted infections, including human immunodeficiency virus infection.

The wide geographic variation in use of the most effective contraceptive methods among the PRAMS reporting areas included in this analysis could be explained by a number of factors, such as environmental support for contraception, that should be explored further. Research should attempt to identify how some states successfully overcame barriers to use of the most effective method postpartum. Moreover, further research should investigate reasons for lower rates of use of the most effective contraceptive methods among non-Hispanic black teens.

The findings in this report are subject to at least five limitations. First, respondents from PRAMS were interviewed in the

TABLE 2. Postpartum contraceptive* use among nonpregnant, sexually active females aged <20 years who delivered live infants — 15 states and New York City,† Pregnancy Risk Assessment Monitoring System (PRAMS), 2007–2010

Characteristic	No. in sample§	%¶	(95% CI)
Total	**5,708**	**100.0**	—
Any use	5,179	91.2	(89.7–92.4)
Most effective			
Tubal ligation	26	0.3	(0.1–0.6)
Vasectomy	20	0.6	(0.3–1.0)
Implant	175	3.3	(2.6–4.2)
Intrauterine device	1,058	18.2	(16.6–20.0)
Moderately effective			
Pill	1,615	29.2	(27.1–31.3)
Shot once a month or shot once every 3 months (e.g., Depo-Provera)	1,173	21.0	(19.2–23.0)
Patch	114	1.8	(1.3–2.5)
Ring	148	2.3	(1.7–2.9)
Less effective			
Condom	747	12.3	(10.9–13.8)
Diaphragm/Cap/Sponge	0	—	—
Rhythm	22	0.5	(0.2–1.0)
Withdrawal	81	1.8	(1.2–2.6)
No method	529	8.8	(7.6–10.3)

Abbreviation: CI = confidence interval.

* Effectiveness determined by the percentage of females who experience pregnancy during the first year of typical use; categorized as most effective (<1%), moderately effective (6%–12%), and less effective (≥18%). If more than one method was reported; only the most effective method was included.

† Sites included Arkansas, Colorado, Michigan, Missouri, Mississippi, North Carolina, Nebraska, New York (excluding New York City), Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Utah, West Virginia, and New York City.

§ Unweighted sample totals from 5,708 females aged <20 years responding that they were not pregnant and were sexually active. If more than one method of contraception was reported, only the method with the highest effectiveness during typical use was included.

¶ Percentages based on weighted data; totals might not sum to 100% because of rounding or missing data for some categories.

period shortly after giving birth; later follow-up is needed to better understand longer-term use of postpartum contraception and determinants of repeat teen childbearing. Second, the PRAMS data do not include information about the consistency and correctness of contraceptive use, which are particularly important determinants of the effectiveness of user-dependent methods of contraception such as condoms and pills. Third, because only 16 PRAMS reporting areas were included in this analysis, results might not be generalizable to other states. Fourth, the years covered by the analysis span from 2007 to 2010, and averaging estimates over these 4 years could mask temporal trends in contraceptive use given continued declines observed in teen birth rates. States with data only for 2007 and 2008 also might have experienced substantial improvements in later years. Finally, the data sources used for these analyses permitted examination only of repeat births among teens rather

Key Points

- Having more than one child during the teen years might pose greater challenges than having one child. Rates of preterm and low birth weight are higher among repeat teen births than among first births.
- Nearly one in five teen births (nearly 67,000 in 2010) is a repeat birth.
- Many teens are taking actions to prevent repeat pregnancies and births. Most (91%) sexually active teen mothers are using contraception in the postpartum period, but only 22% are using the most effective methods.
- Postpartum contraceptive use varies by the number of previous births, race/ethnicity, and geographic location. The geographic variation suggests that barriers might exist to accessing contraception, including the most effective methods of reversible contraception.
- What can be done to help reduce repeat teen births?
  - Work with teens during pregnancy at prenatal visits.
  - Provide broader support and link pregnant and parenting teens to sources of educational, economic, and social support that should continue after the child is born.
  - Counsel teens about abstinence and contraception as a way to prevent pregnancy, and promote condom use to prevent pregnancy and sexually transmitted infections, including human immunodeficiency virus.
  - Encourage providers to offer postpartum contraception to teens.
- Information for those working with pregnant and parenting teens is available from the U.S. Department of Health and Human Services' Office of Adolescent Health's Pregnancy Assistance Fund Resource and Training Center at http://www.hhs.gov/ash/oah/oah-initiatives/paf.
- The Maternal and Child Health Bureau of the Health Resources and Services Administration is helping state and local agencies deliver evidence-based home visiting programs. Additional information is available at http://mchb.hrsa.gov/programs/homevisiting.
- Additional information is available at http://www.cdc.gov/vitalsigns.

than repeat pregnancies; because miscarriages, stillbirths, and abortions were not included, the prevalence of repeat pregnancy likely is higher than repeat births.

The findings in this report suggest that many teen mothers are taking steps in the postpartum period to prevent repeat pregnancy. Previous research has shown that these efforts can be supported by linking pregnant and parenting teens to home visiting programs and other sources of support, as well as health care that includes counseling about and provision of contraception (*5,9,16*).

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Announcement

STD Awareness Month — April 2013

April is STD Awareness Month, an annual event calling attention to the impact of sexually transmitted diseases (STDs) in the United States. This month-long observance provides individuals, doctors, and community-based organizations an opportunity to address ways to prevent some of nearly 20 million new cases of STDs that occur in the United States each year (*1*), costing the U.S. health-care system nearly $16 billion in direct medical costs (*2*), and placing a substantial human and economic burden on the nation.

STDs can lead to serious health problems if not diagnosed and treated early. Undetected and untreated STDs can increase a person's risk for human immunodeficiency virus infection and cause other serious health consequences, such as infertility. However, most STDs are treatable, and many are curable. STD screening can help detect disease early and, when combined with appropriate treatment, is one of the most effective tools available to protect one's health and prevent the spread of STDs to others.

Additional information about STDs and resource materials that can be shared with patients and community members are available at http://www.cdc.gov/std.

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Errata

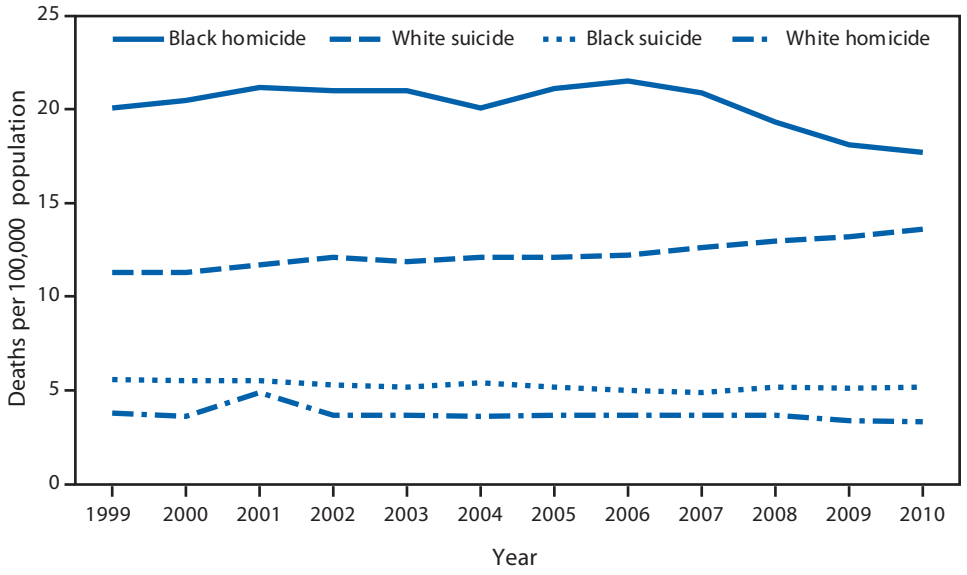
Vol. 62, Suppl 1

In the *MMWR* supplement, "Advisory Committee on Immunization Practices (ACIP) Recommended Immunization Schedules for Persons Aged 0 Through 18 Years and Adults Aged 19 Years and Older — United States, 2013," on page 7, in the third bulleted item under footnote 13, the text should read, "For children aged **2 months** through 10 years with high-risk conditions, see below." On page 8, under Additional Vaccine Information, in the fourth bulleted item, the last reference should read, "American Academy of Pediatrics. **Immunization in Special Clinical Circumstances**. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics."

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Annual Age-Adjusted Death Rates*† for Suicide and Homicide, by Black or White Race — United States,§ 1999–2010



* Deaths are coded as *U03, X60–X84, and Y87.0 for suicide, and *U01–*U02, X85–Y09, and Y87.1 for homicide, as underlying causes of death, according to the *International Classification of Diseases 10th Revision*. Rates include deaths related to the events of September 11, 2001.

† Rates have been revised by using populations enumerated as of April 1, for 2000 and 2010, and intercensal estimates as of July 1 for all other years. Therefore, the rates might differ from those published previously.

§ U.S. residents only.

From 1999 to 2010, annual age-adjusted homicide death rates for blacks were at least four times the rates for whites. In contrast, suicide rates for whites were twice as high as the rates for blacks. From 1999 to 2010, homicide death rates decreased 13.2% among whites, from 3.8 deaths per 100,000 population to 3.3, and suicide rates increased 20.4%, from 11.3 deaths per 100,000 population to 13.6. Among blacks, homicide death rates increased 7.0%, from 20.1 deaths per 100,000 population in 1999 to 21.5 in 2006, then decreased 17.7%, from 21.5 deaths per 100,000 population in 2006 to 17.7 in 2010. Suicide rates decreased 7.1% among blacks, from 5.6 deaths per 100,000 population in 1999 to 5.2 in 2010.

Source: National Vital Statistics System. Mortality public use data files, 1999–2010. Available at http://www.cdc.gov/nchs/data_access/vitalstatsonline.htm.

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