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Current Tobacco Use Among Middle and High School Students — United States, 2011

Tobacco use continues to be the leading preventable cause of death and disease in the United States, with nearly 443,000 deaths occurring annually because of cigarette smoking and exposure to secondhand smoke (*1*). Moreover, nearly 90% of adult smokers begin smoking by age 18 years (*2*). To assess current tobacco use among youths, CDC analyzed data from the 2011 National Youth Tobacco Survey (NYTS). This report describes the results of that analysis, which indicated that, in 2011, the prevalence of current tobacco use among middle school and high school students was 7.1% and 23.2%, respectively, and the prevalence of current cigarette use was 4.3%, and 15.8%, respectively. During 2000–2011, among middle school students, a linear downward trend was observed in the prevalence of current tobacco use (14.9% to 7.1%), current combustible tobacco use (14.0% to 6.3%), and current cigarette use (10.7% to 4.3%). For high school students, a linear downward trend also was observed in these measures (current tobacco use [34.4% to 23.2%], current combustible tobacco use [33.1% to 21.0%], and current cigarette use [27.9% to 15.8%]). Interventions that are proven to prevent and reduce tobacco use among youths include media campaigns, limiting advertisements and other promotions, increasing the price of tobacco products, and reducing the availability of tobacco products for purchase by youths. These interventions should continue to be implemented as part of national comprehensive tobacco control programs and should be coordinated with Food and Drug Administration (FDA) regulations restricting the sale, distribution, and marketing of cigarettes and smokeless tobacco products to youths (*2–4*).

NYTS is a school-based, self-administered, pencil-and-paper questionnaire given to middle school (grades 6–8) and high school (grades 9–12) students to collect information on key tobacco control outcome indicators used to monitor the impact of comprehensive tobacco control policies and programs (e.g., prevalence of tobacco use and smoking cessation, tobacco-related knowledge and attitudes, access to tobacco, exposure to tobacco advertising and promotions, and secondhand smoke exposure).* The survey has been conducted approximately every 2 years since 2000. The 2011 NYTS used a three-stage cluster sampling procedure to generate a cross-sectional, nationally representative sample of students in grades 6–12 from all 50 states and the District of Columbia.

Out of the 214 schools selected, 178 (83.2%) participated; this resulted in a sample of 18,866 (87.4%) out of 21,584 students. In 2011, the overall response rate was 72.7%; from 2000 to 2011, response rates ranged from 72.7% to 84.8%. Respondents were asked about their use of cigarettes, cigars (e.g., premium cigars, cigarillos, and "little cigars"), smokeless tobacco, pipes, bidis (small brown cigarettes wrapped in a leaf), and kreteks (clove cigarettes)† within the last 30 days. For each product, current use was defined as use on at least 1 of the past 30 days. Current tobacco use was defined as current use of any

* Additional information available at http://www.cdc.gov/tobacco/tobacco_control_programs/surveillance_evaluation/key_outcome/pdfs/frontmaterial.pdf.
† Under the Family Smoking Prevention and Tobacco Control Act, kreteks (clove cigarettes) are banned.

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of these tobacco products on at least 1 day during the past 30 days; current combustible tobacco use was defined as current use of any of these tobacco products, with the exception of smokeless tobacco, on at least 1 day during the past 30 days.

Data were adjusted for nonresponse and weighted to provide national prevalence estimates for current tobacco use, current combustible tobacco use, current cigarette smoking, as well as for use of specific tobacco products; 95% confidence intervals were calculated using statistical analysis software to account for the multistage probability sample design. Point estimate differences between the 2009 and 2011 NYTS were assessed for overall current use of tobacco products by school level (middle or high), sex, and race/ethnicity, using a two-tailed t-test for statistical significance ($p<0.05$). Logistic regression analysis was used to analyze temporal changes from 2000 to 2011 in current tobacco use, current combustible tobacco use, and current cigarette use, by school level, controlling for grade, race/ethnicity, and sex, and simultaneously assessed for linear and quadratic trends[§]; a p-value <0.05 was considered statistically significant. Statistical software was used for all calculations to account for the complex survey design.

In 2011, 7.1% of middle school students and 23.2% of high school students reported current use of any tobacco product, and 4.3% of middle school students and 15.8% of high school students reported current use of cigarettes (Table).

[§] Quadratic trends indicate a nonlinear but significant trend over time; a linear trend is depicted by a straight line, whereas a quadratic trend is depicted by a curve with one bend.

Among middle school students, after cigarettes, the most commonly used forms of tobacco were cigars (3.5%), smokeless tobacco (2.2%), pipes (2.2%), bidis (1.7%), and kreteks (1.1%). Among high school students, after cigarettes, the most commonly used forms of tobacco were cigars (11.6%), smokeless tobacco (7.3%), pipes (4.0%), bidis (2.0%), and kreteks (1.7%).

From 2009 to 2011, among middle school students, no statistically significant declines were observed for any of the tobacco use measures. Among high school students, overall declines in current kretek use were observed (2.4% to 1.7%) (Table). Among high school students, current bidi use and current kretek use among females declined from 2.1% to 1.0% and from 1.9% to 0.8%, respectively; among non-Hispanic whites, current kretek use declined from 2.4% to 1.4%; among Hispanics, current cigarette use declined from 19.2% to 15.8%; and among non-Hispanic blacks, an increase in current cigar use (7.1% to 11.7%) was observed.

From 2000 to 2011, among middle school students, significant linear downward trends were observed for current tobacco use (14.9% to 7.1%), current combustible tobacco use (14.0% to 6.3%), and current cigarette use (10.7% to 4.3%) (Figure 1). Among high school students, significant linear downward trends were observed for current tobacco use (34.4% to 23.2%), current combustible tobacco use (33.1% to 21.0%), and current cigarette use (27.9% to 15.8%) (Figure 2).

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TABLE. Prevalence of current use* of tobacco, by tobacco product, school level, sex, and race/ethnicity — National Youth Tobacco Survey, United States, 2009 and 2011

Characteristic	Any tobacco†				Combustible tobacco§				Cigarettes				Cigars			
	2009		2011		2009		2011		2009		2011		2009		2011	
	%	(95% CI¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Middle school																
Sex																
Female	6.7	(5.8–7.6)	5.7	(4.5–7.1)	6.4	(5.6–7.3)	5.3	(4.2–6.8)	4.7	(4.0–5.6)	4.0	(3.1–5.2)	3.2	(2.6–4.0)	2.5	(1.9–3.4)
Male	9.6	(8.2–11.2)	8.4	(7.4–9.6)	8.3	(7.0–9.7)	7.2	(6.2–8.4)	5.6	(4.4–7.0)	4.5	(3.7–5.5)	4.6	(3.9–5.5)	4.3	(3.4–5.4)
Race/Ethnicity																
White, non-Hispanic	7.1	(5.8–8.6)	5.7	(4.7–6.9)	6.0	(4.9–7.3)	4.8	(3.7–6.1)	4.3	(3.3–5.7)	3.8	(2.8–5.1)	3.0	(2.4–3.7)	2.3	(1.7–3.0)
Black, non-Hispanic	8.3	(7.0–9.9)	8.1	(6.4–10.3)	8.1	(6.7–9.7)	7.8	(6.1–10.0)	5.2	(3.9–6.9)	3.6	(2.6–5.0)	4.7	(3.5–6.2)	5.7	(4.3–7.4)
Hispanic	11.1	(9.5–13.0)	11.2	(9.8–12.7)	10.5	(8.9–12.4)	10.5	(9.1–12.0)	6.7	(5.4–8.3)	6.7	(5.6–8.0)	6.2	(5.1–7.4)	6.1	(4.9–7.4)
Asian, non-Hispanic	3.6	(2.1–6.3)	3.4	(1.6–7.1)	2.9	(1.6–5.0)	2.3	(1.0–4.9)	2.5	(1.3–4.6	1.3	(0.5–3.4)	1.4	(0.6–3.5)	0.6	(0.2–2.0)
Total	**8.2**	**(7.2–9.3)**	**7.1**	**(6.1–8.3)**	**7.4**	**(6.5–8.4)**	**6.3**	**(5.4–7.5)**	**5.2**	**(4.3–6.2)**	**4.3**	**(3.5–5.2)**	**3.9**	**(3.4–4.5)**	**3.5**	**(2.8–4.2)**
High school																
Sex																
Female	18.2	(16.1–20.5)	17.8	(15.8–19.9)	17.8	(15.8–20.1)	17.3	(15.4–19.4)	14.8	(13.0–16.8)	13.8	(11.7–16.2)	6.7	(5.2–8.2)	7.4	(6.3–8.6)
Male	29.4	(25.3–33.8)	28.4	(25.5–31.4)	26.5	(23.3–29.9)	24.5	(22.3–26.8)	19.6	(16.9–22.6)	17.7	(15.2–20.4)	15.0	(12.4–18.1)	15.7	(14.3–17.2)
Race/Ethnicity																
White, non-Hispanic	26.7	(23.3–30.1)	25.5	(22.5–28.7)	24.3	(21.6–27.2)	22.5	(19.9–25.3)	19.4	(17.1–22.0)	17.6	(14.7–20.9)	11.9	(9.9–14.2)	12.1	(10.7–13.6)
Black, non-Hispanic	14.0	(10.6–18.3)	18.4	(15.1–22.3)	13.8	(10.4–18.1)	17.5	(14.3–21.3)	7.4	(4.6–10.8)	10.6	(7.6–14.6)	7.1	(4.3–11.6)	11.7	(9.8–13.9)**
Hispanic	24.8	(21.8–28.1)	22.4	(19.9–25.2)	24.2	(21.2–27.6)	21.3	(19.0–23.8)	19.2	(16.7–22.0)	15.8	(13.9–17.8)**	11.8	(9.8–14.2)	11.3	(9.8–13.1)
Asian, non-Hispanic	13.1	(7.9–20.8)	7.8	(5.0–12.1)	12.6	(7.6–20.3)	7.4	(4.6–11.6)	9.7	(6.1–15.2)	5.0	(3.2–7.8)	4.8	(2.7–8.6)	2.9	(1.7–4.9)
Total	**23.9**	**(21.1–26.8)**	**23.2**	**(21.0–25.6)**	**22.2**	**(19.9–24.7)**	**21.0**	**(19.1–23.0)**	**17.2**	**(15.1–19.5)**	**15.8**	**(13.7–18.1)**	**10.9**	**(9.1–13.1)**	**11.6**	**(10.5–12.7)**

See table footnotes below.

TABLE. (*Continued*) Prevalence of current use* of tobacco, by tobacco product, school level, sex, and race/ethnicity — National Youth Tobacco Survey, United States, 2009 and 2011

Characteristic	Smokeless tobacco				Pipes				Bidis				Kreteks			
	2009		2011		2009		2011		2009		2011		2009		2011	
	%	(95% CI¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Middle school																
Sex																
Female	1.4	(1.0–1.9)	1.4	(1.0–2.0)	1.7	(1.2–2.5)	1.8	(1.3–2.5)	1.2	(0.8–1.8)	1.4	(1.0–1.9)	0.7	(0.4–1.1)	0.9	(0.6–1.3)
Male	3.7	(2.8–4.9)	3.0	(2.3–3.8)	2.7	(2.1–3.6)	2.7	(2.1–2.5)	2.0	(1.5–2.6)	1.9	(1.4–2.6)	1.6	(1.2–2.2)	1.3	(1.0–1.6)
Race/Ethnicity																
White, non-Hispanic	2.5	(1.8–3.3)	2.3	(1.8–2.9)	1.5	(1.1–2.0)	1.5	(1.1–2.2)	1.1	(0.7–1.5)	1.0	(0.7–1.5)	0.8	(0.6–1.6)	0.6	(0.4–0.6)
Black, non-Hispanic	1.7	(1.1–2.6)	1.0	(0.5–2.1)	1.9	(1.2–2.9)	1.3	(0.8–2.1)	1.9	(1.2–3.0)	1.9	(1.1–3.2)	1.4	(0.8–2.2)	0.9	(0.5–1.6)
Hispanic	2.5	(1.9–3.3)	2.9	(2.3–3.6)	4.5	(3.4–6.1)	5.0	(4.2–6.1)	2.6	(1.9–3.7)	3.5	(2.6–4.6)	1.8	(1.2–2.7)	2.5	(2.0–3.3)
Asian, non-Hispanic	1.7	(0.7–4.1)	1.3	(0.4–4.2)	1.4	(0.6–3.3)	1.1	(0.3–3.7)	1.6	(0.7–3.6)	0.9	(0.3–2.9)	0.9	(0.3–2.8)	0.7	(0.2–2.8)
Total	**2.6**	**(2.0–3.3)**	**2.2**	**(1.8–2.7)**	**2.3**	**(1.8–2.8)**	**2.2**	**(1.7–2.9)**	**1.6**	**(1.3–2.0)**	**1.7**	**(1.3–2.2)**	**1.2**	**(0.9–1.5)**	**1.1**	**(0.9–1.4)**
High school																
Sex																
Female	1.8	(1.3–2.4)	1.6	(1.2–2.2)	2.5	(1.9–3.3)	2.8	(2.2–3.4)	2.1	(1.6–2.6)	1.0	(0.7–1.4)**	1.9	(1.3–2.8)	0.8	(0.6–1.2)**
Male	11.6	(8.3–15.9)	12.9	(10.4–15.9)	5.3	(4.5–6.3)	5.1	(4.3–6.0)	2.7	(2.1–3.5)	2.9	(2.3–3.7)	2.9	(2.3–3.7)	2.4	(1.9–2.9)
Race/Ethnicity																
White, non-Hispanic	8.5	(6.4–11.3)	9.2	(7.4–11.5)	3.3	(2.5–4.2)	3.5	(2.9–4.4)	1.7	(1.2–2.3)	1.4	(1.0–2.0)	2.4	(1.9–3.0)	1.4	(1.0–2.0)**
Black, non-Hispanic	1.7	(0.7–4.1)	3.0	(1.8–5.1)	3.6	(2.5–5.0)	2.4	(1.5–3.8)	3.7	(2.2–6.3)	2.0	(1.2–3.2)	1.8	(1.0–3.0)	1.3	(0.8–2.2)
Hispanic	4.8	(3.5–6.7)	5.1	(3.8–6.8)	6.8	(4.5–10.0)	6.3	(5.2–7.7)	3.7	(2.7–5.0)	3.7	(2.9–4.8)	2.9	(2.0–4.1)	2.5	(1.9–3.3)
Asian, non-Hispanic	4.9	(1.8–12.8)	2.8	(1.4–5.8)	3.4	(1.6–7.2)	2.9	(1.1–7.4)	3.1	(0.8–11.7)	1.8	(0.9–3.9)	2.0	(0.7–5.9)	2.2	(1.0–4.9)
Total	**6.7**	**(4.8–9.2)**	**7.3**	**(5.9–9.0)**	**3.9**	**(3.4–4.6)**	**4.0**	**(3.4–4.6)**	**2.4**	**(1.9–2.9)**	**2.0**	**(1.6–2.5)**	**2.4**	**(2.0–2.9)**	**1.7**	**(1.4–2.0)****

* Current use of cigarettes was determined by asking, "During the past 30 days, on how many days did you smoke cigarettes?" Current use of cigars was determined by asking, "During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?" Current use of smokeless tobacco was determined by asking, "During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip?" Current use of pipe was determined by asking, "During the past 30 days, on how many days did you smoke tobacco in a pipe?" Current use of bidis was determined by asking, "During the past 30 days, on how many days did you smoke bidis?" Current use of kreteks was determined by asking, "During the past 30 days, on how many days did you smoke kreteks?" Current use was use on ≥1 day.

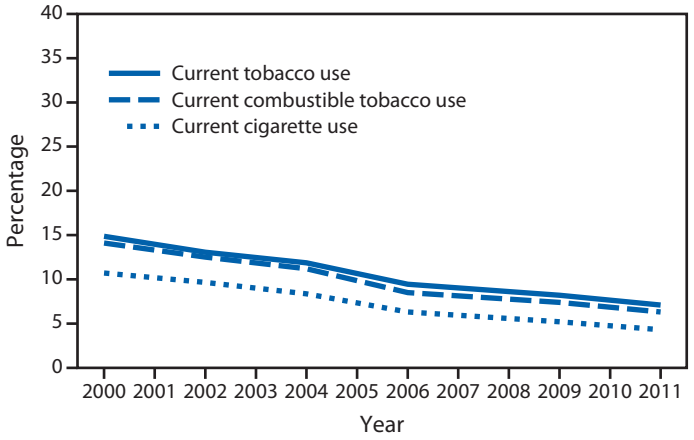
† Any tobacco is use of cigarettes or cigars or smokeless tobacco or tobacco pipes or bidis or kreteks on ≥1 day in the past 30 days.

§ Combustible tobacco is use of cigarettes or cigars or tobacco pipes or bidis or kreteks on ≥1 day in the past 30 days.

¶ Confidence interval.

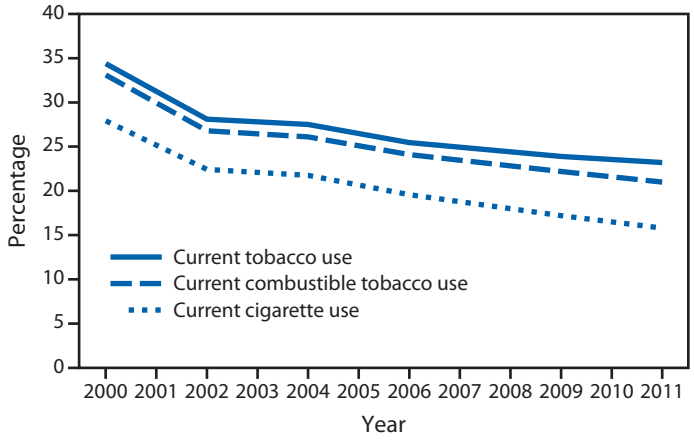
** P-value of the t-test for difference between 2009 and 2011 prevalences is <0.05.

FIGURE 1. Current tobacco use,* current combustible tobacco use,† and current cigarette use§ among adolescents in middle school, by year — National Youth Tobacco Survey, United States, 2000–2011



* Current tobacco use was defined as having used cigarettes, smokeless tobacco, cigars, pipes, bidis, or kreteks on at least 1 day during the past 30 days.
† Current combustible tobacco use was defined as having used cigarettes, cigars, pipes, bidis, or kreteks on at least 1 day during the past 30 days.
§ Current cigarette use was defined as having used cigarettes on at least 1 day during the past 30 days.

FIGURE 2. Current tobacco use,* current combustible tobacco use,† and current cigarette use§ among adolescents in high school, by year — National Youth Tobacco Survey, United States, 2000–2011



* Current tobacco use was defined as having used cigarettes, smokeless tobacco, cigars, pipes, bidis, or kreteks on at least 1 day during the past 30 days.
† Current combustible tobacco use was defined as having used cigarettes, cigars, pipes, bidis, or kreteks on at least 1 day during the past 30 days.
§ Current cigarette use was defined as having used cigarettes on at least 1 day during the past 30 days.

Reported by

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Editorial Note

The findings in this report indicate that from 2000 to 2011, significant declines occurred in the use of current tobacco, combustible tobacco, and cigarettes among middle and high school students, suggesting that tobacco control policies and programs have an impact on tobacco use among U.S. youths (*2*). The rate of decline in youth cigarette smoking was slower during this period compared with 1997–2003, which followed years of increase in the prevalence of youth cigarette use during the 1990s (*2*).

Decreases were observed from 2009 to 2011 in bidi and kretek use among high school females, kretek use among non-Hispanic whites, and kretek use overall. However, notably from 2009 to 2011, among high school non-Hispanic black students, an increase in cigar use was observed. This finding is similar to prevalence trends found using other national data, with increases in cigar smoking observed among black, female high school students (*2*). Further, cigar use among high school males (15.7%) is more than twice as high as use among high school females (7.4%), and is comparable to use of cigarettes by high school males (17.7%). Smokeless tobacco use among high school males (12.9%) is approximately eight times higher than high school females (1.6%).

A recent report indicated that the total consumption of cigarettes decreased by 32.8% from 2000 to 2011, whereas noncigarette combustible tobacco, which includes cigars and loose tobacco, increased by 123%. Additionally, the percentage of combustible tobacco consumption composed of loose tobacco and cigars increased from 3.4% in 2000 to 10.4% in 2011 (*5*). These results are of importance because youths are known to have higher rates of cigar use than adults (*2*). Of note, cigars include traditional premium cigars, cigarillos, and "little cigars," which appear and are packaged and consumed in a manner similar to cigarettes but, depending on their weight, can be taxed at lower rates. No cigars, including cigarette-like cigars, are subject to FDA regulations.¶ In addition, cigars can be produced with flavorings and can be labeled with misleading descriptors such as "light" or "low tar." Although the use of smokeless tobacco and cigars declined during the late 1990s, little change in the use of these tobacco products has been observed during the past 5 years overall (*2*).

The findings in this report are subject to at least four limitations. First, the data were collected from youths who attended either public or private middle or high schools and might not be representative of all youths in the United States, especially those who were not enrolled. Second, recall bias might have been introduced because of the sensitivity of the questions or because some questions asked about past behaviors. Third, this analysis did not examine frequency and intensity of tobacco

¶ FDA has expressed its intent to assert jurisdiction over all tobacco products, including cigars. Additional information available at http://www.gpo.gov/fdsys/pkg/FR-2011-07-07/pdf/2011-15487.pdf.

What is already known on this topic?

Smoking continues to be the leading preventable cause of death and disability in the United States, and nearly 90% of adult smokers begin smoking by age 18 years.

What is added by this report?

During 2000–2011, prevalence of current tobacco use, current combustible tobacco use, and current cigarette smoking declined for middle school and high school students. Among middle school students, a linear downward trend was observed in current tobacco use (14.9% to 7.1%), current combustible tobacco use (14.0% to 6.3%), and current cigarette use (10.7% to 4.3%). Among high school students, a linear downward trend was observed in current tobacco use (34.4% to 23.2%), current combustible tobacco use (33.1% to 21.0%), and current cigarette use (27.9% to 15.8%).

What are the implications for public health practice?

Among middle and high school youths, current tobacco use has decreased. To continue decreasing tobacco use among youths, national and state tobacco control programs should continue to implement evidence-based strategies, including those that will work in conjunction with new Food and Drug Administration regulations restricting the sale, distribution, and marketing of cigarettes and other tobacco products to youths.

use; with the exception of cigarette use, these measures were not available. Therefore, the data do not distinguish between infrequent tobacco users, such as persons using tobacco once per month, and heavy users, such as those who use tobacco daily. Finally, these estimates might differ from estimates derived from other youth surveillance systems; these differences can be explained, in part, by differences in survey methodology used, type of survey administered, survey topic, and age and setting of the target population. However, the relative trends are similar across the various youth surveys (*2*).

Effective, population-based strategies for preventing tobacco use among youths are outlined in the World Health Organization's MPOWER package (*6*) and CDC's *Best Practices for Comprehensive Tobacco Control Programs — 2007* (*3*). Despite partial bans on some forms of advertisement, pro-tobacco marketing continues to have an effect on youths' susceptibility to trying cigarettes (*2,7*). Continued efforts to reduce tobacco marketing and advertisement that affect youths might have further impacts on preventing tobacco use. In June 2010, FDA implemented regulations designed to curb access to and the appeal of cigarettes and smokeless tobacco products among youths.** These regulations, along with other tobacco use prevention activities, are expected to further reduce youth access to and use of tobacco products.

** Additional information available at http://www.fda.gov/tobaccoproducts/protectingkidsfromtobacco/regsrestrictingsale/ucm204589.htm.

Although comprehensive tobacco control programs are effective in decreasing tobacco use in the United States, they remain underfunded (*8*). During 1998 to 2010 states have received a total of $243.8 billion in tobacco settlement and cigarette excise tax revenues (*8*); however, only $8.1 billion (2.8%) was dedicated to state tobacco control programs (*8*). Many states are facing drastic budgetary cuts, resulting in near elimination of their tobacco control programs (*8*). Evidence indicates that low levels of tobacco control funding lead to low levels of media campaigns focusing on tobacco use prevention among youths (*4*), which might be one reason why current declines are occurring much more slowly than those observed during the period 1997–2003, which saw a 40% decline (*9*). Fully funding and implementing comprehensive tobacco control programs might have further impact on preventing and reducing tobacco use among youths. A combination of sustained funding at CDC-recommended levels (*3*), effective population-based strategies (e.g., price increases and smoke-free policies) (*2*), and enforcement of the Family Smoking Prevention and Tobacco Control Act (*10*) are needed to influence changes in social norms around cigarette and any other tobacco use among youths.

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Interim Guidance for Clinicians Considering the Use of Preexposure Prophylaxis for the Prevention of HIV Infection in Heterosexually Active Adults

In the United States, an estimated 48,100 new human immunodeficiency virus (HIV) infections occurred in 2009 (*1*). Of these, 27% were in heterosexual men and women who did not inject drugs, and 64% were in men who have sex with men (MSM), including 3% in MSM who inject drugs. In January 2011, following publication of evidence of safety and efficacy of daily oral tenofovir disoproxil fumarate 300 mg (TDF)/emtricitabine 200 mg (FTC) (Truvada, Gilead Sciences) as antiretroviral preexposure prophylaxis (PrEP) to reduce the risk for HIV acquisition among MSM in the iPrEx trial, CDC issued interim guidance to make available information and important initial cautions on the use of PrEP in this population. Those recommendations remain valid for MSM, including MSM who also have sex with women (*2*). Since January 2011, data from studies of PrEP among heterosexual men and women have become available, and on July 16, 2012, the Food and Drug Administration (FDA) approved a label indication for reduction of risk for sexual acquisition of HIV infection among adults, including both heterosexuals and MSM.* This interim guidance includes consideration of the new information and addresses pregnancy and safety issues for heterosexually active adults at very high risk for sexual HIV acquisition that were not discussed in the previous interim guidance for the use of PrEP in MSM.

Data from the four randomized, double-blind, placebo-controlled, clinical trials of oral PrEP with TDF and FTC that have been conducted in HIV-uninfected, heterosexually active adults were reviewed. Medical epidemiologists in the Division of HIV/AIDS Prevention of the National Center for HIV, Viral Hepatitis, STD, and TB Prevention at CDC developed this interim guidance. Subject matter experts at other federal health agencies, academic researchers, health department HIV policy stakeholders, and community representatives have participated in working groups and consultations to inform content for comprehensive U.S. Public Health Service (PHS) guidelines for PrEP use currently in development; those ideas also were used in developing this interim guidance.

Rationale and Evidence

The Partners PrEP trial evaluated a daily dose of a fixed-dose combination of 300 mg TDF and 200 mg FTC, and daily TDF alone (300 mg), for the HIV-uninfected male or female partner in HIV-discordant couples (where one partner is infected with HIV and the other is not) in Kenya and Uganda (*3*). The TDF2 trial evaluated daily TDF/FTC in adult women and men in Botswana (*4*), the FEM-PrEP study evaluated daily TDF/FTC in women in Kenya, South Africa, and Tanzania (*5*), and the VOICE trial in women in Uganda, South Africa, and Zimbabwe included one group to assess daily oral TDF/FTC, a second group to assess daily oral TDF alone, and a third group to assess daily use of a 1% tenofovir vaginal gel (*6*). These four trials compared HIV infection rates in participants randomized to receive antiretroviral medication compared with rates in participants randomized to receive placebo pills. All participants in these four trials received regular risk-reduction counseling, condoms, medication adherence counseling, and testing for sexually transmitted infections with treatment as indicated (Table 1).

No serious toxicities were identified in any of the four trials comparing participants receiving daily oral TDF/FTC with those receiving placebo pills; however, in the first 1–2 months on medication, nausea and vomiting were more common in those receiving TDF/FTC than in those receiving placebo. The Partners PrEP trial reported 75% efficacy for TDF/FTC (95% confidence interval [CI] = 55%–87%) and 67% efficacy for TDF (CI = 44%–81%), with 97% medication adherence by returned pill count. In the trial, no statistically significant difference in efficacy between the two regimens was observed, and efficacy was reported for both men and women independently (Table 2). The TDF2 trial found 62% efficacy (CI = 22%–83%) in men and women combined, with 84% medication adherence by returned pill count. Among persons tested who were assigned to receive TDF/FTC, the drug was detected in the blood of 81% of persons in Partners PrEP and 81% of persons in TDF2. In Partners PrEP, within a subgroup of persons who received TDF/FTC and had plasma drug levels tested, having measurable TDF concentrations was associated with a 90% risk reduction compared with placebo.

The FEM-PrEP trial and the oral TDF portion of the VOICE trial were stopped early by their data safety monitoring boards when they concluded that no evidence of efficacy would be found (futility). In the FEM-PrEP trial, researchers reported very low levels of medication adherence. Frequency of drug detection in in the blood of FEM-PrEP participants overall was not reported but was <27% among women who acquired HIV infection and <38% among matched uninfected controls. No interim analysis data were provided from the VOICE trial because the trial remains blinded, and the oral TDF/FTC and placebo study groups are continuing, with final results anticipated in late 2013.

The findings in this report are subject to at least three limitations. First, the assessment of adherence by drug-level testing

* Available at http://www.fda.gov/forconsumers/byaudience/forpatientadvocates/hivandaidsactivities/ucm312264.htm.

TABLE 1. Study design and methods used in four PrEP efficacy trials with daily oral TDF/FTC*

Study	Population	No. and sex of participants	Design	Total follow-up time (per participant median)	No. of incident HIV infections		
					Placebo	TDF/FTC	Total
iPrEx	MSM	2,499 (100% male)	RDBPCT	3,324 person-yrs (1.8 yrs)	64	36	**100**
Partners PrEP	Heterosexual HIV-discordant couples	4,758 couples (38% with female HIV+ partner)†	RDBPCT	7,830 person-yrs (23 mos)	52	13	**65**†
TDF2	Heterosexual men and women	1,216 (46% female)	RDBPCT	1,563 person-yrs (1.1 yrs)	24	9	**33**
FEM-PrEP	Heterosexual women	2,056 (100% female)	RDBPCT	1,407 person-yrs (NR)	35	33	**68**

Abbreviations: PrEP = preexposure prophylaxis; TDF/FTC = tenofovir disoproxil fumarate/emtricitabine; MSM = men who have sex with men; HIV = human immunodeficiency virus; RDBPCT = randomized, double-blind, placebo-controlled clinical trial; NR = not reported.
* Restricted to trials of oral TDF/FTC only; this guidance does not address use of other antiretroviral regimens.
† For TDF/FTC and placebo groups only.

TABLE 2. Measures of efficacy in four PrEP efficacy trials with daily oral TDF/FTC,* by medication adherence

Study	Population	mITT† % reduction in HIV incidence (95% CI)			Combined self-report and pill-count medication adherence measures (95% CI)		Pill-count medication adherence measures (95% CI)	TDF blood detection§ (95% CI)
iPrEx	MSM	44% (15%–63%)			>50%¶	50% (18%–70%)	NR	92% (40%–99%)
					>90%¶	73% (41%–88%)		
		All	**Men**	**Women**				
Partners PrEP	Heterosexual HIV-discordant couples	75% (55%–87%)	84% (54%–95%)	66% (28%–84%)	NR		100%** (87%–100%)	90% (58%–98%)
TDF2	Heterosexual men and women	62% (22%–83%)	80% (25%–97%)	49% (-21%–81%, NS)	NR		NR	84% (-62%–98%, NS)
FEM-PrEP	Heterosexual women	NS	NS	NS	NR		NR	NS

Abbreviations: PrEP = preexposure prophylaxis; TDF/FTC = tenofovir disoproxil fumarate/emtricitabine; mITT = modified intent to treat analysis; CI = confidence interval; MSM = men who have sex with men; HIV = human immunodeficiency virus; NR = not reported; NS = finding not statistically significant.
* Restricted to trials of oral TDF/FTC only; this guidance does not address use of other antiretroviral regimens.
† Excluded only those enrolled participants later found to be infected at randomization and those with no follow-up visit or HIV test.
§ The percentage of reduction in HIV incidence among persons with TDF detected in blood, compared with those without detectable TDF.
¶ The percentage reduction in HIV incidence, compared with the placebo group, is presented for two groups: those with 50% medication adherence and those with 90% adherence.
** In a substudy of participants who provided counts via home-based unannounced pill counts with supplementary adherence counseling if the counts were <80%.

currently is incomplete in trials with heterosexually active adults and is likely to provide important additional information regarding the relationship of efficacy to medication adherence that will need to be addressed in clinical practice. Second, women who became pregnant during the PrEP trials described in this report were discontinued promptly from medication, so the safety of chronic fetal exposure could not be assessed adequately. Therefore, decisions to continue PrEP during pregnancy require additional consideration. Both TDF and FTC have been used among HIV-infected pregnant women to prevent perinatal transmission, have been studied for use by discordant couples attempting conception, and have been examined in antiretroviral treatment trials that included HIV-infected women who continued therapy during their pregnancies. Data from these sources and the Antiretroviral Use in Pregnancy Registry† indicate no evidence of adverse effects among fetuses exposed to TDF or FTC (*7*). In addition, the higher risk for HIV transmission to uninfected women during pregnancy (compared with uninfected women who are not pregnant) might indicate an added value to continuing PrEP during pregnancy (*8*). Finally, sexual risk behaviors and adherence to PrEP medications among persons taking TDF/FTC for PrEP in clinical practice, when users are made aware of trial results, might be different from adherence by heterosexually active adults in PrEP trials who were unaware of their assignment to active drug or placebo and could not know the impact of adherence on efficacy.

Recommendation for Clinicians

Daily oral TDF/FTC use in two studies has been shown to be safe in reducing the risk for sexual HIV acquisition by heterosexual women and men when consistently used. In a third study

† Available at http://www.apregistry.com.

with heterosexual women, PrEP was not found to be effective, and results are pending in a fourth study. The conflicting trial results for efficacy of TDF/FTC in heterosexual women can be partially explained by the low medication adherence in FEM-PrEP compared with the higher adherence in Partners PrEP and TDF2. As yet unidentified factors also might have influenced the results.

Until comprehensive PHS guidelines are available, CDC's January 2011 interim recommendations should help guide the use of PrEP in MSM (*2*). On the basis of the new data regarding PrEP use in heterosexually active adults, CDC now provides the following interim guidance for clinicians considering the use of PrEP for adults at very high risk for HIV acquisition through heterosexual sex (e.g., those with partners known to have HIV infection): 1) TDF/FTC is contraindicated for PrEP in persons with unknown or positive HIV status; 2) in women and men at very high risk for acquiring HIV from penile-vaginal sex, daily doses of TDF/FTC can be safe and effective in reducing the risk of HIV infection; 3) PrEP use may be one of several options (*9,10*) to help protect the HIV-negative partner in discordant couples during attempts to conceive; and 4) women of reproductive age should have a documented pregnancy test before beginning PrEP and if not pregnant at initiation, at regular intervals while being prescribed PrEP. If women are either pregnant before initiating PrEP or become pregnant while being prescribed PrEP, health-care providers should discuss currently available information regarding potential risks and benefits of continuing PrEP so that an informed decision can be made. If a woman takes PrEP while pregnant, providers are encouraged to prospectively and anonymously submit information about the pregnancy to the Antiretroviral Use in Pregnancy Registry.

Health-care providers should be aware, and should inform their patients that 1) the efficacy of TDF/FTC for HIV prevention is highly dependent on adherence to daily doses of medication, and 2) its long-term safety in HIV-uninfected adults or following fetal exposure is not yet determined. Health-care providers should report any serious adverse events resulting from prescribed TDF/FTC for PrEP to the FDA's MedWatch.[§]

CDC and other PHS agencies are developing PHS guidelines on the use of PrEP as part of a comprehensive set of HIV prevention services that will include specific recommendations for use with MSM and heterosexually active adults at very high risk for HIV acquisition. The guidelines will be updated as information about factors affecting efficacy and safety for all transmission risk groups becomes available from additional studies.

Important Reminders

PrEP has the potential to contribute to safe and effective HIV prevention for heterosexually active adults as well as MSM. CDC advises clinicians and patients to use this interim guidance as a basis to prescribe or use PrEP for heterosexually active patients until full PHS guidelines are available (Box). When PrEP is used by heterosexually active adults, it is important to ensure that 1) PrEP is targeted to persons at very high risk for HIV acquisition (*11*), especially uninfected persons whose regular sexual partners are known to have HIV infection; 2) the importance of adherence to daily medication and its influence on efficacy is clearly discussed; 3) couples understand that although no adverse effects have been found among infants exposed to TDF/FTC during pregnancy and breastfeeding, these data are incomplete for women in HIV-discordant couples using TDF/FTC to prevent acquisition of HIV; 4) PrEP is delivered as part of a comprehensive set of prevention services, including risk-reduction, PrEP medication adherence counseling, and ready access to condoms; 5) sexually transmitted infection treatment is provided when indicated by laboratory screening tests conducted at least every 6 months, and 6) PrEP is accompanied by monitoring of HIV status, pregnancy status, side effects, adherence, and risk behaviors at each quarterly follow-up visit.

[§] Available at http://www.fda.gov/safety/medwatch.

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BOX. Interim guidance for health-care providers electing to provide preexposure prophylaxis (PrEP) for the prevention of human immunodeficiency virus (HIV) infection in heterosexually active adults who are at ongoing, very high risk for sexual acquisition of HIV infection*

Before initiating PrEP

Determine eligibility

- Document negative HIV antibody test immediately before starting PrEP medication.
- Test for acute HIV infection if patient has symptoms consistent with acute HIV infection or reports unprotected sex with an HIV-positive person in the preceding month.
- Determine if women are planning to become pregnant, are currently pregnant, or are breastfeeding.
- Confirm that patient is at ongoing, very high risk for acquiring HIV infection.
- If any sexual partner is known to be HIV-infected, determine whether receiving antiretroviral therapy; assist with linkage to care if not in care or not receiving antiretroviral therapy.
- Confirm that calculated creatinine clearance is ≥60 mL per minute (Cockcroft-Gault formula†).

Other recommended actions

- Screen for hepatitis B infection; vaccinate against hepatitis B if susceptible, or treat if active infection exists, regardless of decision regarding prescribing PrEP.
- Screen and treat as needed for sexually transmitted infections (STIs).
- Disclose to women that safety for infants exposed during pregnancy is not fully assessed but no harm has been reported.
- Do not prescribe PrEP to women who are breastfeeding.

Beginning PrEP medication regimen

- Prescribe tenofovir disoproxil fumarate (TDF) 300 mg plus emtricitabine (FTC) 200 mg (i.e., one Truvada [Gilead Sciences] tablet) daily.
- In general, prescribe no more than a 90-day supply, renewable only after HIV testing confirms that patient remains HIV-uninfected. For women, ensure that pregnancy test is negative or, if pregnant, that the patient has been informed about use during pregnancy.
- If active hepatitis B infection is diagnosed, consider using TDF/FTC, which may serve as both treatment of active hepatitis B infection and HIV prevention.
- Provide risk-reduction and PrEP medication–adherence counseling and condoms.

Follow-up while PrEP medication is being taken

- Every 2–3 months, perform an HIV antibody test (or fourth generation antibody/antigen test) and document negative result.
- At each follow-up visit for women, conduct a pregnancy test and document results; if pregnant, discuss continued use of PrEP with patient and prenatal-care provider.
- Evaluate and support PrEP medication adherence at each follow-up visit, more often if inconsistent adherence is identified.
- Every 2–3 months, assess risk behaviors and provide risk-reduction counseling and condoms. Assess STI symptoms and, if present, test and treat for STIs as needed.
- Every 6 months, test for bacterial STIs, even if asymptomatic, and treat as needed.
- Three months after initiation, then every 6 months while on PrEP medication, check serum creatinine and calculate creatinine clearance.

On discontinuing PrEP (at patient request, for safety concerns, or if HIV infection is acquired)

- Perform HIV test(s) to confirm whether HIV infection has occurred.
- If HIV-positive, order and document results of resistance testing, establish linkage to HIV care.
- If HIV-negative, establish linkage to risk reduction support services as indicated.
- If active hepatitis B is diagnosed at initiation of PrEP, consider appropriate medication for continued treatment of hepatitis B infection.
- If pregnant, inform prenatal-care provider of TDF/FTC use in early pregnancy and coordinate care to maintain HIV prevention during pregnancy and breastfeeding.

* E.g., those with partners known to have HIV infection.
† Additional information available at Cockcroft DW, Gault MH. Prediction of creatinine clearance from serum creatinine. Nephron 1976;16:31–41.

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Update to CDC's *Sexually Transmitted Diseases Treatment Guidelines, 2010*: Oral Cephalosporins No Longer a Recommended Treatment for Gonococcal Infections

Gonorrhea is a major cause of serious reproductive complications in women and can facilitate human immunodeficiency virus (HIV) transmission (*1*). Effective treatment is a cornerstone of U.S. gonorrhea control efforts, but treatment of gonorrhea has been complicated by the ability of *Neisseria gonorrhoeae* to develop antimicrobial resistance. This report, using data from CDC's Gonococcal Isolate Surveillance Project (GISP), describes laboratory evidence of declining cefixime susceptibility among urethral *N. gonorrhoeae* isolates collected in the United States during 2006–2011 and updates CDC's current recommendations for treatment of gonorrhea (*2*). Based on GISP data, CDC recommends combination therapy with ceftriaxone 250 mg intramuscularly and either azithromycin 1 g orally as a single dose or doxycycline 100 mg orally twice daily for 7 days as the most reliably effective treatment for uncomplicated gonorrhea. CDC no longer recommends cefixime at any dose as a first-line regimen for treatment of gonococcal infections. If cefixime is used as an alternative agent, then the patient should return in 1 week for a test-of-cure at the site of infection.

Infection with *N. gonorrhoeae* is a major cause of pelvic inflammatory disease, ectopic pregnancy, and infertility, and can facilitate HIV transmission (*1*). In the United States, gonorrhea is the second most commonly reported notifiable infection, with >300,000 cases reported during 2011. Gonorrhea treatment has been complicated by the ability of *N. gonorrhoeae* to develop resistance to antimicrobials used for treatment. During the 1990s and 2000s, fluoroquinolone resistance in *N. gonorrhoeae* emerged in the United States, becoming prevalent in Hawaii and California and among men who have sex with men (MSM) before spreading throughout the United States. In 2007, emergence of fluoroquinolone-resistant *N. gonorrhoeae* in the United States prompted CDC to no longer recommend fluoroquinolones for treatment of gonorrhea, leaving cephalosporins as the only remaining recommended antimicrobial class (*3*). To ensure treatment of co-occurring pathogens (e.g., *Chlamydia trachomatis*) and reflecting concern about emerging gonococcal resistance, CDC's 2010 sexually transmitted diseases (STDs) treatment guidelines recommended combination therapy for gonorrhea with a cephalosporin (ceftriaxone 250 mg intramuscularly or cefixime 400 mg orally) plus either azithromycin orally or doxycycline orally, even if nucleic acid amplification testing (NAAT) for *C. trachomatis* was negative at the time of treatment (*2*). From 2006 to 2010, the minimum concentrations of cefixime needed to inhibit the growth in vitro of *N. gonorrhoeae* strains circulating in the United States and many other countries increased, suggesting that the effectiveness of cefixime might be waning (*4*). Reports from Europe recently have described patients with uncomplicated gonorrhea infection not cured by treatment with cefixime 400 mg orally (*5*–*8*).

GISP is a CDC-supported sentinel surveillance system that has monitored *N. gonorrhoeae* antimicrobial susceptibilities since 1986, and is the only source in the United States of national and regional *N. gonorrhoeae* antimicrobial susceptibility data. During September–December 2011, CDC and five external GISP principal investigators, each with *N. gonorrhoeae*–specific expertise in surveillance, antimicrobial resistance, treatment, and antimicrobial susceptibility testing, reviewed antimicrobial susceptibility trends in GISP through August 2011 to determine whether to update CDC's current recommendations (*2*) for treatment of uncomplicated gonorrhea. Each month, the first 25 gonococcal urethral isolates collected from men attending participating STD clinics (approximately 6,000 isolates each year) were submitted for antimicrobial susceptibility testing. The minimum inhibitory concentration (MIC), the lowest antimicrobial concentration that inhibits visible bacterial growth in the laboratory, is used to assess antimicrobial susceptibility. Cefixime susceptibilities were not determined during 2007–2008 because cefixime temporarily was unavailable in the United States at that time. Criteria for resistance to cefixime and ceftriaxone have not been defined by the Clinical Laboratory Standards Institute (CLSI). However, CLSI does consider isolates with cefixime or ceftriaxone MICs ≥0.5 μg/mL to have "decreased susceptibility" to these drugs (*9*). During 2006–2011, 15 (0.1%) isolates had decreased susceptibility to cefixime (all had MICs = 0.5 μg/mL), including nine (0.2%) in 2010 and one (0.03%) during January–August 2011; 12 of 15 were from MSM, and 12 were from the West and three from the Midwest.* No isolates

* U.S. Census regions. *Northeast:* Connecticut, Maine, Massachusetts, New Jersey, New Hampshire, 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, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

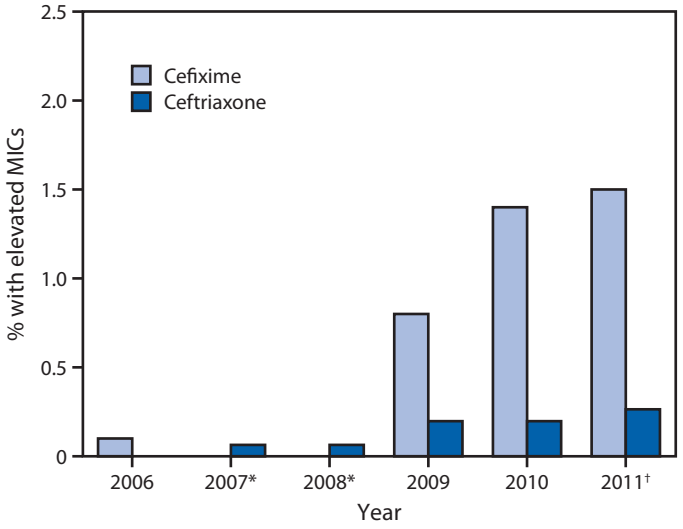
exhibited decreased susceptibility to ceftriaxone. Because increasing MICs can predict the emergence of resistance, lower cephalosporin MIC breakpoints were established by GISP for surveillance purposes to provide greater sensitivity in detecting declining gonococcal susceptibility than breakpoints defined by CLSI. Cefixime MICs ≥0.25 μg/mL and ceftriaxone MICs ≥0.125 μg/mL were defined as "elevated MICs." CLSI does not define azithromycin resistance criteria; CDC defines decreased azithromycin susceptibility as ≥2.0 μg/mL.

Evidence and Rationale

The percentage of isolates with elevated cefixime MICs (MICs ≥0.25 μg/mL) increased from 0.1% in 2006 to 1.5% during January–August 2011 (Figure). In the West, the percentage increased from 0.2% in 2006 to 3.2% in 2011 (Table). The largest increases were observed in Honolulu, Hawaii (0% in 2006 to 17.0% in 2011); Minneapolis, Minnesota (0% to 6.9%); Portland, Oregon (0% to 6.5%); and San Diego, California (0% to 6.4%). Nationally, among MSM, isolates with elevated MICs to cefixime increased from 0.2% in 2006 to 3.8% in 2011. In 2011, a higher proportion of isolates from MSM had elevated cefixime MICs than isolates from men who have sex exclusively with women (MSW), regardless of region (Table).

The percentage of isolates exhibiting elevated ceftriaxone MICs increased slightly, from 0% in 2006 to 0.4% in 2011 (Figure). The percentage increased from <0.1% in 2006 to 0.8% in 2011 in the West, and did not increase significantly in the Midwest (0% to 0.2%) or the Northeast and South (0.1% in 2006 and 2011). Among MSM, the percentage increased from 0.0% in 2006 to 1.0% in 2011.

FIGURE. Percentage of urethral *Neisseria gonorrhoeae* isolates (n = 32,794) with elevated cefixime MICs (≥0.25 μg/mL) and ceftriaxone MICs (≥0.125 μg/mL) — Gonococcal Isolate Surveillance Project, United States, 2006–August 2011



Abbreviation: MICs = minimum inhibitory concentrations.
* Cefixime susceptibility not tested during 2007–2008.
† January–August 2011.

The 2010 CDC STD treatment guidelines (*2*) recommend that azithromycin or doxycycline be administered with a cephalosporin as treatment for gonorrhea. The percentage of isolates exhibiting tetracycline resistance (MIC ≥2.0 μg/mL) was high but remained stable from 2006 (20.6%) to 2011 (21.6%). The percentage exhibiting decreased susceptibility to azithromycin (MIC ≥2.0 μg/mL) remained low (0.2% in 2006 to 0.3% in 2011). Among 180 isolates collected during 2006–2011 that exhibited elevated cefixime MICs, 139 (77.2%) exhibited

TABLE. Percentage of urethral *Neisseria gonorrhoeae* isolates with elevated cefixime MICs (≥0.25 μg/mL), by U.S. Census region and gender of sex partner — Gonococcal Isolate Surveillance Project, United States, 2006–August 2011

	2006		2009		2010		2011*	
Region	**%**	**(95% CI)**	**%**	**(95% CI)**	**%**	**(95% CI)**	**%**	**(95% CI)**
West† (total)	**0.2**	**(0.1–0.4)**	**1.9**	**(1.4–2.6)**	**3.3**	**(2.6–4.0)**	**3.2**	**(2.3–4.2)**
MSM	0.1	(0.0–0.6)	2.6	(1.7–3.8)	5.0	(3.8–6.5)	4.5	(3.1–6.3)
MSW	0.2	(0.0–0.6)	1.4	(0.7–2.3)	1.3	(0.7–2.2)	1.8	(0.9–3.1)
Midwest§ (total)	**0.0**	**(0.0–0.3)**	**0.5**	**(0.2–1.0)**	**0.5**	**(0.2–1.1)**	**0.6**	**(0.2–1.5)**
MSM	0.0	(0.0–2.8)	2.3	(0.6–5.7)	3.4	(1.1–7.7)	4.9	(1.4–12.2)
MSW	0.0	(0.0–0.3)	0.3	(0.1–0.7)	0.1	(0.0–0.6)	0.0	(0.0–0.6)
Northeast and South¶ (total)	**0.1**	**(0.0–0.3)**	**0.0**	**(0.0–0.2)**	**0.1**	**(0.0–0.4)**	**0.3**	**(0.1–0.8)**
MSM	0.6	(0.0–3.0)	0.3	(0.0–1.9)	0.9	(0.2–2.5)	1.5	(0.4–3.9)
MSW	0.0	(0.0–0.2)	0.0	(0.0–0.2)	0.0	(0.0–0.2)	0.1	(0.0–0.4)

Abbreviations: CI = confidence interval; MICs = minimum inhibitory concentrations; MSM = men who have sex with men; MSW = men who have sex exclusively with women.
* January–August 2011.
† Includes data from Albuquerque, New Mexico; Denver, Colorado; Honolulu, Hawaii; Las Vegas, Nevada; Los Angeles, California; Orange County, California; Phoenix, Arizona; Portland, Oregon; San Diego, California; San Francisco, California; and Seattle, Washington.
§ Includes data from Chicago, Illinois; Cincinnati, Ohio; Cleveland, Ohio; Detroit, Michigan; Kansas City, Missouri; and Minneapolis, Minnesota.
¶ Includes data from Atlanta, Georgia; Baltimore, Maryland; Birmingham, Alabama; Dallas, Texas; Greensboro, North Carolina; Miami, Florida; New Orleans, Louisiana; New York, New York; Oklahoma City, Oklahoma; Philadelphia, Pennsylvania; and Richmond, Virginia.

tetracycline resistance, but only one (0.6%) had decreased susceptibility to azithromycin.

Ceftriaxone as a single intramuscular injection of 250 mg provides high and sustained bactericidal levels in the blood and is highly efficacious at all anatomic sites of infection for treatment of *N. gonorrhoeae* infections caused by strains currently circulating in the United States (*10,11*). Clinical data to support use of doses of ceftriaxone >250 mg are not available. A 400-mg oral dose of cefixime does not provide bactericidal levels as high, nor as sustained as does an intramuscular 250-mg dose of ceftriaxone, and demonstrates limited efficacy for treatment of pharyngeal gonorrhea (*10,11*). The significant increase in the prevalence of U.S. GISP isolates with elevated cefixime MICs, most notably in the West and among MSM, is of particular concern because the emergence of fluoroquinolone-resistant *N. gonorrhoeae* in the United States during the 1990s also occurred initially in the West and predominantly among MSM before spreading throughout the United States within several years. Thus, observed patterns might indicate early stages of the development of clinically significant gonococcal resistance to cephalosporins. CDC anticipates that rising cefixime MICs soon will result in declining effectiveness of cefixime for the treatment of urogenital gonorrhea. Furthermore, as cefixime becomes less effective, continued use of cefixime might hasten the development of resistance to ceftriaxone, a safe, well-tolerated, injectable cephalosporin and the last antimicrobial that is recommended and known to be highly effective in a single dose for treatment of gonorrhea at all anatomic sites of infection. Maintaining effectiveness of ceftriaxone for as long as possible is critical. Thus, CDC no longer recommends the routine use of cefixime as a first-line regimen for treatment of gonorrhea in the United States.

Based on experience with other microbes that have developed antimicrobial resistance rapidly, a theoretical basis exists for combination therapy using two antimicrobials with different mechanisms of action to improve treatment efficacy and potentially delay emergence and spread of resistance to cephalosporins. Therefore, the use of a second antimicrobial (azithromycin as a single 1-g oral dose or doxycycline 100 mg orally twice daily for 7 days) is recommended for administration with ceftriaxone. The use of azithromycin as the second antimicrobial is preferred to doxycycline because of the convenience and compliance advantages of single-dose therapy and the substantially higher prevalence of gonococcal resistance to tetracycline than to azithromycin among GISP isolates, particularly in strains with elevated cefixime MICs.

Recommendations

For treatment of uncomplicated urogenital, anorectal, and pharyngeal gonorrhea, CDC recommends combination therapy with a single intramuscular dose of ceftriaxone 250 mg plus either a single dose of azithromycin 1 g orally or doxycycline 100 mg orally twice daily for 7 days (Box).

Clinicians who diagnose gonorrhea in a patient with persistent infection after treatment (treatment failure) with the recommended combination therapy regimen should culture relevant clinical specimens and perform antimicrobial susceptibility testing of *N. gonorrhoeae* isolates. Phenotypic antimicrobial susceptibility testing should be performed using disk diffusion, Etest (BioMérieux, Durham, NC), or agar dilution. Data currently are limited on the use of NAAT-based antimicrobial susceptibility testing for genetic mutations associated with

BOX. Updated recommended treatment regimens for gonococcal infections

Uncomplicated gonococcal infections of the cervix, urethra, and rectum

Recommended regimen

Ceftriaxone 250 mg in a single intramuscular dose
PLUS
Azithromycin 1 g orally in a single dose
or doxycycline 100 mg orally twice daily for 7 days*

Alternative regimens

If ceftriaxone is not available:
Cefixime 400 mg in a single oral dose
PLUS
Azithromycin 1 g orally in a single dose
or doxycycline 100 mg orally twice daily for 7 days*
PLUS
Test-of-cure in 1 week

If the patient has severe cephalosporin allergy:
Azithromycin 2 g in a single oral dose
PLUS
Test-of-cure in 1 week

Uncomplicated gonococcal infections of the pharynx

Recommended regimen

Ceftriaxone 250 mg in a single intramuscular dose
PLUS
Azithromycin 1 g orally in a single dose
or doxycycline 100 mg orally twice daily for 7 days*

*Because of the high prevalence of tetracycline resistance among Gonococcal Isolate Surveillance Project isolates, particularly those with elevated minimum inhibitory concentrations to cefixime, the use of azithromycin as the second antimicrobial is preferred.

resistance in *N. gonorrhoeae*. The laboratory should retain the isolate for possible further testing. The treating clinician should consult an infectious disease specialist, an STD/HIV Prevention Training Center (http://www.nnptc.org), or CDC (telephone: 404-639-8659) for treatment advice, and report the case to CDC through the local or state health department within 24 hours of diagnosis. A test-of-cure should be conducted 1 week after re-treatment, and clinicians should ensure that the patient's sex partners from the preceding 60 days are evaluated promptly with culture and treated as indicated.

When ceftriaxone cannot be used for treatment of urogenital or rectal gonorrhea, two alternative options are available: cefixime 400 mg orally plus either azithromycin 1 g orally or doxycycline 100 mg twice daily orally for 7 days if ceftriaxone is not readily available, or azithromycin 2 g orally in a single dose if ceftriaxone cannot be given because of severe allergy. If a patient with gonorrhea is treated with an alternative regimen, the patient should return 1 week after treatment for a test-of-cure at the infected anatomic site. The test-of-cure ideally should be performed with culture or with a NAAT for *N. gonorrhoeae* if culture is not readily available. If the NAAT is positive, every effort should be made to perform a confirmatory culture. All positive cultures for test-of-cure should undergo phenotypic antimicrobial susceptibility testing. Patients who experience treatment failure after treatment with alternative regimens should be treated with ceftriaxone 250 mg as a single intramuscular dose and azithromycin 2 g orally as a single dose and should receive infectious disease consultation. The case should be reported to CDC through the local or state health department.

For all patients with gonorrhea, every effort should be made to ensure that the patients' sex partners from the preceding 60 days are evaluated and treated for *N. gonorrhoeae* with a recommended regimen. If a heterosexual partner of a patient cannot be linked to evaluation and treatment in a timely fashion, then expedited partner therapy should be considered, using oral combination antimicrobial therapy for gonorrhea (cefixime 400 mg and azithromycin 1 g) delivered to the partner by the patient, a disease investigation specialist, or through a collaborating pharmacy.

The capacity of laboratories in the United States to isolate *N. gonorrhoeae* by culture is declining rapidly because of the widespread use of NAATs for gonorrhea diagnosis, yet it is essential that culture capacity for *N. gonorrhoeae* be maintained to monitor antimicrobial resistance trends and determine susceptibility to guide treatment following treatment failure. To help control gonorrhea in the United States, health-care providers must maintain the ability to collect specimens for culture and be knowledgeable of laboratories to which they can send specimens for culture. Health-care systems and health departments must support access to culture, and laboratories must maintain culture capacity or develop partnerships with laboratories that can perform culture.

Treatment of patients with gonorrhea with the most effective therapy will limit the transmission of gonorrhea, prevent complications, and likely will slow emergence of resistance. However, resistance to cephalosporins, including ceftriaxone, is expected to emerge. Reinvestment in gonorrhea prevention and control is warranted. New treatment options for gonorrhea are urgently needed.

Reported by

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Vital Signs: Walking Among Adults — United States, 2005 and 2010

On August 7, 2012, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Abstract

Background: Physical activity has numerous health benefits, including improving weight management. The *2008 Physical Activity Guidelines for Americans* recommend ≥150 minutes/week of moderate-intensity aerobic physical activity (e.g., brisk walking) for substantial health benefits. Walking is the most commonly reported physical activity by U.S. adults.

Methods: CDC used data from the 2005 and 2010 National Health Interview Surveys to assess changes in prevalence of walking (defined as walking for transportation or leisure in at least one bout of 10 minutes or more in the preceding 7 days) by sex, age group, race/ethnicity, education, body mass index category, walking assistance status, region, and physician-diagnosed chronic disease. CDC also assessed the association between walking and meeting the aerobic physical activity guideline.

Results: Overall, walking prevalence increased significantly from 55.7% in 2005 to 62.0% in 2010. Significantly higher walking prevalence was observed in most demographic and health characteristic categories examined. In 2010, the adjusted odds ratio of meeting the aerobic physical activity guideline among walkers, compared with non-walkers, was 2.95 (95% confidence interval = 2.73–3.19).

Conclusions and Implications for Public Health Practice: To sustain increases in the prevalence of walking, communities can implement evidence-based strategies such as creating or enhancing access to places for physical activity, or using design and land use policies and practices that emphasize mixed-use communities and pedestrian-friendly streets. The impact of these strategies on both walking and physical activity should be monitored systematically at the national, state, and local levels. Public health efforts to promote walking as a way to meet physical activity guidelines can help improve the health of U.S. residents.

Introduction

Regular physical activity helps with weight control; however, physical activity also provides many health benefits even without weight loss (*1*). Regular physical activity helps prevent early death and chronic diseases such as coronary heart disease, stroke, type 2 diabetes, depression, and some types of cancer (*1,2*). The *2008 Physical Activity Guidelines for Americans* concluded that adults should engage in aerobic physical activity of moderate intensity (e.g., brisk walking) for at least 150 minutes per week, or of vigorous intensity (e.g., jogging) for at least 75 minutes per week, or an equivalent combination, in periods lasting at least 10 minutes each to gain substantial health benefits (*3*). One third of U.S. adults, however, report no aerobic physical activity during their leisure time and less than half report levels of activity that meet the current aerobic physical activity guideline (*4*).

Walking is the most commonly reported physical activity among U.S. adults overall and also the most frequently reported activity among adults who meet physical activity guidelines (*5,6*). Most adults are physically able to walk and for many persons with disabilities, walking or moving with assistive devices is also possible. Walking is a physical activity most persons can do because it does not require a special skill or special facilities, and can be done indoors or outdoors, alone or with others (*7*). Walking also can be undertaken for multiple purposes, such as for leisure-time exercise or transportation.

Promotion of walking is a viable public health strategy to help adults meet physical activity guidelines and gain health benefits. This report summarizes the association between walking and meeting physical activity guidelines and examines changes in walking among U.S. adults using data from the 2005 and 2010 National Health Interview Survey (NHIS).

Methods

NHIS is a continuous cross-sectional survey of U.S. households using in-person interviews.* The survey consists of a core questionnaire as well as supplements to address public health data needs as they arise. Questions specific to walking for leisure and transportation were only asked in the 2005 and 2010 cancer control supplements and were asked of a randomly

* Additional information available at http://www.cdc.gov/nchs/nhis.htm.

selected adult (aged ≥18 years) in each sampled family. The overall adult response rate, incorporating family and household response rates, was 69.0% in 2005 and 60.8% in 2010. From an initial combined sample of 58,585, a total of 9,128 participants were excluded for missing data on physical activity or walking (5,054 persons) or because of an inability to walk (1,386), or for missing data on health characteristics (2,417) or demographics (271). The final analytical sample included 26,328 participants from 2005 and 23,129 from 2010.

Walking was defined as engaging in at least one bout of 10 minutes or more of transportation walking or leisure-time walking during the past 7 days. To assess transportation walking, respondents to the 2005 and 2010 NHIS cancer control supplement were asked if they walked "to get some place" that took ≥10 minutes in the past 7 days. To assess leisure-time walking ("for fun, relaxation, exercise, or to walk the dog") respondents were asked if during the past 7 days they walked "for at least 10 minutes" in 2010 and "for at least 10 minutes at a time" in 2005. Usual walking time for each purpose (transportation, leisure-time) was assessed by asking respondents how long they walked each day (2005) or during each bout (2010). Respondents reporting times of <10 minutes were classified as non-walkers for that walking purpose.

Meeting the current aerobic physical activity guideline was defined as participating in ≥150 minutes of moderate-intensity equivalent aerobic activity per week. The guideline was assessed using responses to the NHIS adult core questionnaire on the usual frequency and duration of light- to moderate-intensity and of vigorous-intensity leisure-time aerobic physical activity. Minutes of vigorous-intensity activity were multiplied by two when combining light/moderate and vigorous intensity to calculate the moderate intensity–equivalent combination (*3*). All other analytic variables were derived from the adult core questionnaire.

Prevalence of walking and 95% confidence intervals (CIs) were estimated, and percentage point differences between 2005 and 2010 were compared by sex, age group, race/ethnicity, educational level, region of residence, body mass index category, walking assistance status (i.e., those who cannot, or find it very difficult, "to walk one-quarter mile without special equipment" were categorized as "needs assistance"), and presence of physician-diagnosed chronic diseases (i.e., arthritis, hypertension, and diabetes). Changes in prevalence from 2005 to 2010 were assessed using t-tests. Among walkers, mean time spent walking was estimated by combining the time spent in each purpose for walking. Multiple variable logistic regression analysis was used to estimate the odds for meeting the aerobic physical activity guideline among walkers compared with non-walkers, adjusting for all other variables. The adjusted odds ratios (aORs) were similar for 2005 and 2010; therefore, the more recent 2010 results are presented. Statistical software was used to account for the complex sampling design and provide weighted and age-adjusted national estimates.

Results

From 2005 to 2010, the proportion of U.S. adults who reported walking increased significantly by 6.3 percentage points, from 55.7% to 62.0%. Among men, the increase was 7.4 percentage points, from 54.3% to 61.7%, and among women the increase was 5.2 percentage points, from 57.2% to 62.4% (Table 1). Among both sexes, the prevalence increase was significant in most subgroups. The mean time spent walking among walkers decreased significantly from approximately 15 minutes per day (105.5 minutes per week [CI = 103.2–107.8]) in 2005 to approximately 13 minutes per day (90.8 minutes per week [CI = 88.8–92.9]) in 2010.

The prevalence of meeting the aerobic physical activity guideline increased significantly from 42.1% in 2005 to 48.0% in 2010. In 2010, 59.5% of adults who walked met the guideline compared with 29.5% of those who did not walk. Walkers were significantly more likely to meet the aerobic physical activity guideline than non-walkers (aOR = 2.95). This association was significant for both men (aOR = 2.64) and women (aOR = 3.46) and for persons with every characteristic examined (Table 2). Even among adults needing walking assistance, approximately one in four reported walking and walking was strongly associated with meeting the guideline. When stratified by weekly walking time, the aORs of meeting the aerobic physical activity guideline among walkers, compared with non-walkers, increased with increasing walking time: 10–19 minutes per week: 1.34; 20–29 minutes per week: 1.52; 30–59 minutes per week: 1.80; ≥60 minutes per week: 3.82. When adults reporting no physical activity were excluded from the analysis, walkers were more likely to meet the guideline compared with persons who did not walk (aOR for men = 1.46 [CI: 1.25–1.72], aOR for women = 1.80 [CI: 1.58–2.06]).

Conclusions and Comments

The results in this report show an association between recent walking and meeting the aerobic physical activity guideline and suggest promotion of walking might be an effective strategy to increase physical activity. Significant increases in the percentage of U.S. adults who reported walking were seen in nearly all subgroups in 2010 compared with 2005. Importantly, in subgroups at risk for inactivity, such as adults with lower educational attainment (*4*), increases occurred. However, although the percentage of U.S. residents who walked increased from 2005 to 2010, average walking time among those who walked at least 10 minutes in the preceding 7 days decreased by about 2 minutes per day. The reason for this finding is unknown. Overall, the results of this analysis are consistent with the increase in prevalence of those

TABLE 1. Percentage of adults aged ≥18 years who reported recent walking,* by sex and selected characteristics — National Health Interview Survey, United States, 2005 and 2010†

	Men					Women				
	2005 (N = 11,813)		2010 (N = 10,473)		Percentage point change from 2005 to 2010§	2005 (N =14,515)		2010 (N = 12,656)		Percentage point change from 2005 to 2010§
Characteristic	%	(95% CI)	%	(95% CI)		%	(95% CI)	%	(95% CI)	
Total	**54.3**	**(53.0–55.6)**	**61.7**	**(60.6–62.9)**	**7.4**	**57.2**	**(56.0–58.4)**	**62.4**	**(61.2–63.6)**	**5.2**
Age group (yrs)										
18–24	56.4	(52.9–59.8)	65.2	(61.6–68.9)	8.9	61.1	(57.8–64.5)	65.3	(62.1–68.5)	4.2¶
25–34	52.3	(49.8–54.8)	63.7	(61.1–66.4)	11.4	59.6	(57.1–62.0)	66.7	(64.3–69.1)	7.2
35–44	54.5	(52.2–56.8)	61.2	(58.6–63.8)	6.7	62.0	(59.8–64.2)	66.1	(63.8–68.4)	4.1
45–64	54.4	(52.6–56.3)	61.7	(59.8–63.6)	7.3	56.7	(54.8–58.6)	62.6	(60.9–64.4)	5.9
≥65	54.3	(51.6–56.9)	57.5	(54.7–60.4)	3.3¶	46.6	(44.4–48.8)	50.5	(48.0–52.9)	3.8
Race/Ethnicity										
White, non-Hispanic	55.1	(53.6–56.7)	62.8	(61.3–64.2)	7.6	59.3	(57.9–60.8)	64.0	(62.5–65.5)	4.6
Black, non-Hispanic	50.9	(47.9–53.8)	55.3	(52.1–58.5)	4.4	47.5	(45.0–50.1)	53.7	(51.1–56.4)	6.2
Hispanic	52.2	(49.4–55.0)	60.0	(57.3–62.8)	7.8	54.1	(51.1–57.1)	60.7	(58.3–63.1)	6.6
Other race	54.1	(48.6–59.6)	65.1	(61.2–69.1)	11.1	59.2	(55.0–63.3)	67.1	(64.0–70.2)	7.9
Education level										
Less than high school graduate	46.5	(43.9–49.0)	53.7	(51.0–56.4)	7.3	47.0	(44.3–49.6)	51.1	(48.3–53.9)	4.2
High school graduate	46.4	(44.4–48.4)	55.3	(53.1–57.4)	8.9	49.6	(47.6–51.6)	55.6	(53.3–57.8)	6.0
Some college	55.7	(53.6–57.7)	61.6	(59.5–63.8)	5.9	59.8	(57.9–61.7)	63.3	(61.3–65.3)	3.5
College graduate	64.8	(62.4–67.2)	71.5	(69.3–73.7)	6.7	68.5	(66.3–70.7)	72.3	(70.2–74.4)	3.8
Region										
Midwest	54.3	(51.8–56.8)	60.4	(58.0–62.8)	6.1	56.5	(54.1–58.8)	62.6	(60.4–64.9)	6.2
Northeast	62.0	(59.1–64.9)	66.2	(63.4–69.0)	4.2	66.1	(63.8–68.4)	65.5	(62.6–68.3)	-0.7¶
South	47.7	(45.6–49.9)	57.3	(55.2–59.4)	9.6	50.6	(48.4–52.8)	56.3	(54.3–58.4)	5.7
West	58.8	(56.0–61.6)	66.1	(63.8–68.4)	7.3	61.8	(59.4–64.2)	69.1	(66.8–71.4)	7.3
Body mass index**										
Underweight/Normal weight	55.1	(53.0–57.2)	63.9	(62.0–65.9)	8.8	61.3	(59.8–62.8)	66.5	(65.0–68.1)	5.2
Overweight	55.7	(53.8–57.5)	62.5	(60.7–64.4)	6.9	56.4	(54.4–58.5)	63.8	(62.0–65.6)	7.4
Obese	51.6	(49.4–53.9)	58.3	(56.1–60.4)	6.6	49.8	(47.8–51.8)	54.5	(52.4–56.6)	4.7
Walking assistance status††										
Needs assistance	26.6	(19.5–33.7)	26.8	(19.5–34.2)	0.2¶	25.7	(20.5–31.0)	23.6	(18.1–29.2)	-2.1¶
Does not need assistance	55.8	(54.5–57.1)	63.7	(62.5–64.8)	7.8	59.6	(58.4–60.8)	65.2	(64.0–66.4)	5.6
Meeting the aerobic physical activity guideline§§										
Meets	70.8	(69.3–72.3)	74.6	(73.2–76.0)	3.8	76.8	(75.4–78.2)	79.4	(78.1–80.8)	2.6
Does not meet	41.2	(39.5–42.8)	48.7	(47.0–50.4)	7.5	44.8	(43.3–46.2)	49.2	(47.6–50.8)	4.4
Chronic disease										
Arthritis	52.8	(50.2–55.4)	57.6	(55.1–60.1)	4.8	50.7	(48.8–52.6)	54.1	(52.0–56.3)	3.5
Hypertension	53.3	(51.1–55.5)	60.5	(58.5–62.6)	7.2	49.9	(47.9–51.9)	54.0	(52.0–56.0)	4.1
Diabetes	53.8	(50.1–57.6)	55.1	(51.3–58.9)	1.2¶	42.7	(39.0–46.5)	47.3	(43.7–51.0)	4.6¶

See footnotes on page 598.

meeting the aerobic physical activity guideline and with findings from another national survey† showing increases in walking (*8*). Because walking or moving with assistance is possible for most persons, does not require special skills or facilities, and can serve multiple purposes, it represents a way many U.S. residents can achieve a more physically active lifestyle, regardless of sex, race/ethnicity, age, or education level.

Less than half of the adult population report getting enough aerobic physical activity for substantial health benefits, and nearly one third report being physically inactive (*4*). The public health implications of low levels of physical activity are addressed in the National Prevention Strategy's Active Living Priority (*9*), the National Physical Activity Plan (*10*), and more recently, the Institute of Medicine's Accelerating Progress in Obesity Prevention consensus report (*11*). These reports recommend environmental and policy efforts involving communities, schools, governments, worksites, and health-care agencies to increase opportunities for physical activity, of which walking can be an important part.

The Guide to Community Preventive Services§ recommends evidenced-based approaches to increase physical activity; three of the recommended environmental and policy strategies can be used to promote walking. The first, creating or enhancing access to places for physical activity combined with informational

† Additional information available at http://nhts.ornl.gov.

§ Additional information available at http://www.thecommunityguide.org/index.html.

TABLE 1. (*Continued*) Percentage of adults aged ≥18 years who reported recent walking,* by sex and selected characteristics — National Health Interview Survey, United States, 2005 and 2010†

Characteristic	Men and women overall				
	2005 (N = 26,328)		2010 (N = 23,129)		Percentage point change from 2005 to 2010§
	%	(95% CI)	%	(95% CI)	
Total	**55.7**	**(54.7–56.7)**	**62.0**	**(61.1–62.9)**	**6.3**
Age group (yrs)					
18–24	58.7	(56.3–61.2)	65.3	(62.8–67.8)	6.6
25–34	55.9	(54.1–57.8)	65.2	(63.3–67.1)	9.3
35–44	58.2	(56.6–59.9)	63.6	(61.9–65.4)	5.4
45–64	55.6	(54.2–57.0)	62.2	(60.9–63.5)	6.6
≥65	50.0	(48.3–51.8)	53.7	(51.9–55.5)	3.6
Race/Ethnicity					
White, non-Hispanic	57.2	(56.0–58.4)	63.3	(62.2–64.4)	6.1
Black, non-Hispanic	49.0	(46.8–51.2)	54.4	(52.0–56.8)	5.4
Hispanic	53.0	(50.9–55.0)	60.2	(58.3–62.2)	7.3
Other race	56.5	(53.2–59.8)	66.3	(63.8–68.7)	9.8
Education level					
Less than high school graduate	46.6	(44.7–48.5)	52.4	(50.4–54.4)	5.8
High school graduate	47.7	(46.2–49.1)	55.3	(53.7–56.9)	7.7
Some college	57.8	(56.3–59.3)	62.5	(61.0–64.1)	4.7
College graduate	66.9	(65.0–68.7)	72.0	(70.5–73.5)	5.1
Region					
Midwest	55.3	(53.3–57.3)	61.4	(59.6–63.2)	6.1
Northeast	64.2	(62.3–66.1)	65.8	(63.5–68.0)	1.6¶
South	49.1	(47.2–51.0)	56.8	(55.2–58.4)	7.7
West	60.2	(58.2–62.2)	67.5	(65.8–69.2)	7.3
Body mass index**					
Underweight/Normal weight	58.9	(57.5–60.3)	65.5	(64.2–66.8)	6.6
Overweight	55.8	(54.4–57.2)	63.0	(61.6–64.3)	7.2
Obese	50.5	(48.9–52.2)	56.3	(54.8–57.9)	5.8
Walking assistance status††					
Needs assistance	26.0	(21.4–30.5)	25.0	(20.3–29.7)	-1.0¶
Does not need assistance	57.7	(56.7–58.7)	64.4	(63.5–65.3)	6.7
Meeting the aerobic physical activity guideline§§					
Meets	73.6	(72.5–74.7)	76.8	(75.7–77.8)	3.2
Does not meet	43.0	(41.8–44.2)	48.9	(47.7–50.1)	5.9
Chronic disease					
Arthritis	51.5	(49.9–53.2)	55.6	(53.9–57.3)	4.1
Hypertension	51.6	(49.9–53.2)	57.3	(55.8–58.8)	5.7
Diabetes	48.4	(45.6–51.2)	51.5	(48.8–54.3)	3.1¶

Abbreviation: CI = confidence interval.

* Walking for transportation (i.e., "to get to some place") or for leisure (i.e., "for fun, relaxation, exercise, or to walk the dog") for at least one bout of 10 minutes or more in the preceding 7 days.

† Estimates were age adjusted to the 2000 U.S. standard population, using five age groups: 18–24 years, 25–34 years, 35–44 years, 45–64 years, and ≥65 years. Estimates by age group and chronic disease were not age adjusted.

§ Differences might not appear exact because of rounding.

¶ Not statistically significant (p≥0.05).

** Body mass index (weight [kg] / height [m]^2) estimates were calculated from self-reported weight and height. Underweight and normal weight: <25.0, overweight: 25.0–29.9, and obese: ≥30.

†† Needs assistance = participant cannot, or finds it very difficult to, walk a quarter-mile without special equipment.

§§ Participant is physically active, per self-report, at moderate intensity ≥150 minutes/week, vigorous intensity ≥75 minutes/week, or at an equivalent combination.

outreach, includes improving walking trails so they are accessible to those with mobility limitations, creating and promoting walking paths around a worksite, and establishing joint use agreements to allow use of school tracks for walking during non–school hours (*12*). A second strategy, using street-scale urban design and land use policies, includes improved street lighting and landscaping, infrastructure projects to increase safety of street crossings, and use of traffic calming features such as speed bumps (*13*). A third strategy, using community-scale urban design land use policies and practices, includes applying building codes and zoning regulations that facilitate mixed-use development (i.e., jobs, housing, and commercial activities located in close proximity to one another) and designing and operating complete streets (i.e., including bicycle lanes and sidewalks) that enable safe access to all users, including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities, including those with

TABLE 2. Adjusted odds ratio for meeting the *2008 Physical Activity Guidelines for Americans* for aerobic activity, comparing walkers* with non-walkers, by sex and selected characteristics — National Health Interview Survey, United States, 2010†

Characteristic	Men		Women		Men and women overall	
	Adjusted odds ratio	(95% CI)	Adjusted odds ratio	(95% CI)	Adjusted odds ratio	(95% CI)
Total	**2.64**	**(2.37–2.95)**	**3.46**	**(3.11–3.84)**	**2.95**	**(2.73–3.19)**
Age group (yrs)						
18–24	1.78	(1.25–2.55)	3.99	(2.94–5.42)	2.54	(2.02–3.19)
25–34	2.21	(1.75–2.78)	3.80	(2.99–4.83)	2.73	(2.32–3.22)
35–44	2.82	(2.25–3.54)	3.32	(2.63–4.20)	3.00	(2.58–3.49)
45–64	2.95	(2.44–3.56)	3.54	(2.92–4.30)	3.18	(2.78–3.64)
≥65	3.99	(3.04–5.23)	2.82	(2.29–3.48)	3.36	(2.85–3.95)
Race/Ethnicity						
White, non-Hispanic	2.76	(2.40–3.18)	3.37	(2.95–3.85)	2.99	(2.71–3.30)
Black, non-Hispanic	2.39	(1.80–3.17)	3.27	(2.54–4.22)	2.70	(2.27–3.22)
Hispanic	2.60	(2.04–3.32)	3.84	(3.04–4.86)	2.96	(2.48–3.53)
Other race	2.25	(1.51–3.35)	4.92	(3.38–7.16)	3.28	(2.52–4.28)
Education level						
Less than high school graduate	2.14	(1.64–2.77)	3.49	(2.57–4.74)	2.63	(2.14–3.23)
High school graduate	2.81	(2.30–3.42)	3.72	(3.04–4.55)	3.12	(2.74–3.56)
Some college	2.76	(2.24–3.41)	3.40	(2.81–4.11)	2.99	(2.61–3.42)
College graduate	2.73	(2.21–3.37)	3.45	(2.88–4.12)	2.96	(2.58–3.40)
Region						
Midwest	2.76	(2.23–3.42)	3.74	(3.04–4.60)	3.12	(2.72–3.58)
Northeast	2.57	(1.98–3.34)	2.71	(2.06–3.55)	2.60	(2.10–3.21)
South	2.89	(2.41–3.47)	3.98	(3.33–4.76)	3.31	(2.91–3.76)
West	2.33	(1.83–2.98)	3.12	(2.54–3.83)	2.61	(2.21–3.08)
Body mass index§						
Underweight/Normal weight	2.37	(1.96–2.86)	3.83	(3.28–4.47)	3.07	(2.72–3.47)
Overweight	2.64	(2.24–3.10)	3.22	(2.65–3.92)	2.78	(2.45–3.16)
Obese	2.99	(2.40–3.71)	3.18	(2.58–3.92)	3.04	(2.62–3.52)
Walking assistance status¶						
Needs assistance	2.56	(1.28–5.13)	2.64	(1.61–4.33)	2.52	(1.70–3.72)
Does not need assistance	2.65	(2.37–2.96)	3.51	(3.16–3.90)	2.98	(2.75–3.22)
Chronic disease						
Arthritis	3.12	(2.45–3.97)	2.88	(2.34–3.55)	2.96	(2.53–3.47)
Hypertension	2.80	(2.28–3.44)	3.02	(2.45–3.73)	2.91	(2.50–3.38)
Diabetes	2.55	(1.79–3.65)	3.61	(2.44–5.34)	2.79	(2.20–3.54)

Abbreviation: CI = confidence interval.
* Walking for transportation (i.e., "to get to some place") or for leisure (i.e., "for fun, relaxation, exercise, or to walk the dog") for at least one bout of 10 minutes or more in the preceding 7 days.
† Estimates were adjusted for age group, race/ethnicity, education level, region, body mass index, walking assistance status, and presence of arthritis, hypertension and diabetes.
§ Body mass index (weight [kg] / height [m]^2) estimates were calculated from self-reported weight and height. Underweight and normal weight: <25.0, overweight: 25.0–29.9, and obese: ≥30.
¶ Needs assistance = participant cannot, or finds it very difficult to, walk a quarter-mile without special equipment.

disabilities (*13*). Implementation of these strategies can increase safe and accessible opportunities for all U.S. residents to integrate more physical activity, such as walking or moving with assistance, into their daily lives. Systematic monitoring of changes in walking and physical activity at national, state, and local levels is key to assessing the impact of these efforts.

The implementation of environmental and policy approaches to increase physical activity in communities is supported in several federal initiatives. For example, CDC currently funds 25 states to address obesity and other chronic diseases by changing environments where persons live, work, learn, and play, and includes physical activity as a target behavior.¶ CDC's Communities Putting Prevention to Work program** and Community Transformation Grants program†† implement environmental changes such as providing safe, accessible places for walking. The First Lady's Let's Move! campaign§§ promotes an Active Communities initiative to revitalize parks and community centers. Other organizations also have implemented these approaches. For example, the nonprofit Rails-to-Trails Conservancy¶¶ strives to create a nationwide network of trails

¶ Additional information available at http://www.cdc.gov/obesity/stateprograms.

** Additional information available at http://www.cdc.gov/communitiesputtingpreventiontowork.
†† Additional information available at http://www.cdc.gov/communitytransformation.
§§ Additional information available at http://www.letsmove.gov.
¶¶ Additional information available at http://www.railstotrails.org/index.html.

and connecting corridors from former rail lines, with nearly 20,000 miles of rail-trail now available for walking and other physical activities such as running and bicycling. Even relatively small modifications to the environment can help increase walking. Because walking is an activity most persons can do, environmental improvements to support walking could have broad reach to improve physical activity and health (*12*).

The findings in this report are subject to at least four limitations. First, NHIS data are self-reported and subject to recall and social-desirability biases (*14*). However, currently the only way to measure specific physical activities, such as walking, in a surveillance system is through survey questionnaires. Second, the recall periods and domains for aerobic physical activity assessment (i.e., usual or leisure-time) and walking (i.e., past 7 days, transportation or leisure-time) were different, and quantifying to what extent walking contributes to meeting the guidelines was not possible. Third, the NHIS leisure-time walking questions changed slightly from 2005 to 2010. However, the potential effect of this change was limited by reclassifying all walkers who reported at least 10 minutes per day of walking to non-walkers if the usual bout time was not at least 10 minutes. Finally, response rates in 2005 and 2010 were 69.0% and 60.8%, respectively; therefore, the findings might be subject to response bias. However, NHIS data undergo nonresponse bias analysis and are weighted to adjust for nonresponse. Any residual nonresponse bias related to walking is presumed constant over time.

Improving physical activity generally and walking specifically requires support from many societal sectors. U.S. residents should have safe and accessible options for physical activity, regardless of age, education level or disability status (*9*). The findings in this analysis suggest that walking is an activity many adults can do. Achieving at least 150 minutes/week of moderate-intensity physical activity lowers the risk for a number of chronic diseases and can help maintain a healthy weight. Many U.S. residents are missing the opportunity to improve their health through regular physical activity. Modifying environments and policies to improve the spaces and increase the number of places for walking might facilitate continued increases in the percentage of U.S. residents who are physically active.

Reported by

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Key Points

- Regular physical activity provides many health benefits; however, approximately half of all adults do not get the recommended amount of physical activity and about one third report no physical activity.
- The percentage of adults who walk for at least 10 minutes at a time increased from 55.7% in 2005 to 62.0% in 2010.
- Adults should get at least 150 minutes of moderate-intensity aerobic activity each week. Walkers are approximately three times more likely than non-walkers to meet this guideline.
- Walking is a physical activity most persons can do because it does not require special equipment, can be done indoors or outdoors, and can be done alone or with others.
- Improving spaces and increasing places for walking can help more adults get the physical activity needed for health benefits.
- Additional information is available at http://www.cdc.gov/vitalsigns.

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Announcement

Epidemic Intelligence Service Application Deadline — September 1, 2012

Applications are now being accepted for CDC's July 2013–June 2015 Epidemic Intelligence Service (EIS) program. EIS is a 2-year, postgraduate program of service and on-the-job training for health professionals interested in the practice of epidemiology. Each year, EIS selects approximately 80 persons from applicants around the world and provides them with opportunities to gain hands-on experience in epidemiology at CDC or at state or local health departments. EIS officers, often called CDC's "disease detectives," have gone on to occupy leadership positions at CDC and other public health agencies nationally and internationally. However, the experience also is useful for health professionals who want to gain a population health perspective.

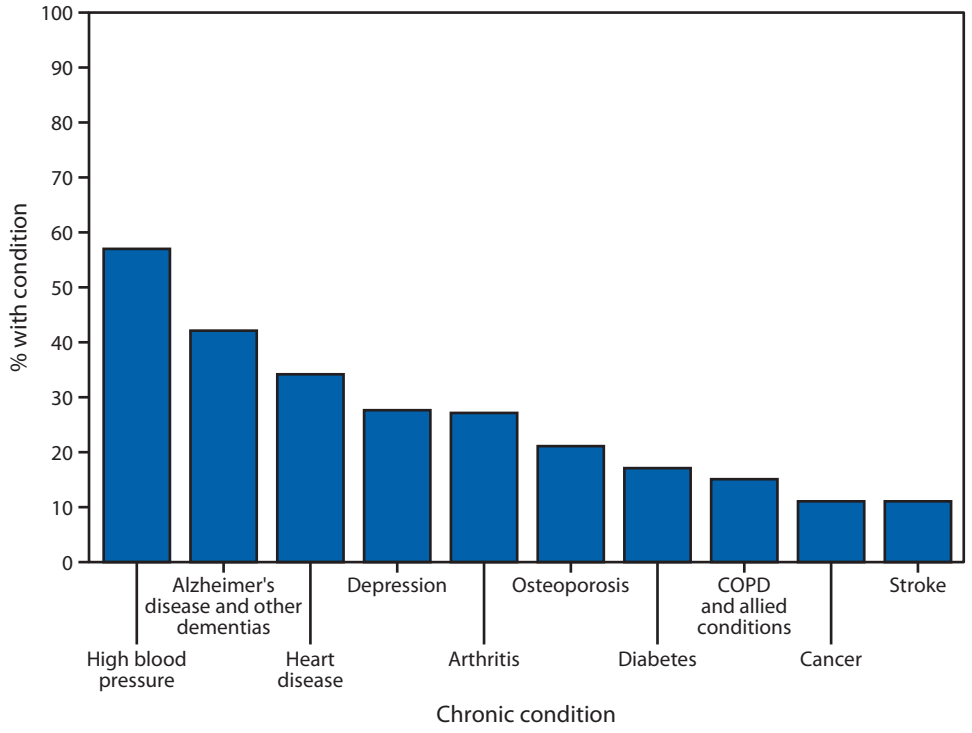
Persons with a strong interest in applied epidemiology who meet at least one of the following qualifications may apply to EIS: physicians with at least 1 year of clinical training; persons with a PhD, DrPH, or other doctoral degree in epidemiology, biostatistics, social or behavioral sciences, natural sciences, or nutrition sciences; dentists, physician assistants, or nurses with an MPH or equivalent degree; or veterinarians with an MPH or equivalent degree or relevant public health experience.

The EIS online application and program information are available at http://www.cdc.gov/eis/applynow.html, by telephone (404-498-6110), or by e-mail (eis@cdc.gov).

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Ten Most Common Chronic Conditions* Among Persons Living in Residential Care Facilities — National Survey of Residential Care Facilities, United States, 2010



Abbreviation: COPD = chronic obstructive pulmonary disease.
* Residents could have more than one condition. Those with missing data were excluded.

In 2010, the 10 most common chronic conditions among persons living in residential care facilities were high blood pressure (57% of the residents), Alzheimer's disease or other dementias (42%), heart disease (34%), depression (28%), arthritis (27%), osteoporosis (21%), diabetes (17%), COPD and allied conditions (15%), cancer (11%), and stroke (11%). The residents ranged in age from 18 to 106 years.

Source: National Survey of Residential Care Facilities, 2010. Available at http://www.cdc.gov/nchs/nsrcf/nsrcf_questionnaires.htm

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