

## Seat Belt Use Among Adult Workers — 21 States, 2013

Winifred L. Boal, MPH<sup>1</sup>; Jia Li, MS<sup>1</sup>; Rosa L. Rodriguez-Acosta, PhD<sup>2</sup>

Roadway incidents involving motorized vehicles accounted for 24% of fatal occupational injuries in the United States during 2013 and were the leading cause of fatal injuries among workers.\* In 2013, workers' compensation costs for serious, nonfatal injuries among work-related roadway incidents involving motorized land vehicles were estimated at \$2.96 billion.<sup>†</sup> Seat belt use is a proven method to reduce injuries to motor vehicle occupants (*I*). Use of lap/shoulder seat belts reduces the risk for fatal injuries to front seat occupants of cars by 45% and the risk to light truck occupants by 60%.<sup>§</sup> To characterize seat belt use among adult workers by occupational group, CDC analyzed data from the 2013 Behavioral Risk Factor Surveillance System (BRFSS) and found that not always using a seat belt was significantly associated with occupational group after controlling for factors known to influence seat belt use. Occupational groups with the highest prevalences of not always using a seat belt included construction and extraction; farming, fishing, and forestry; and installation, maintenance, and repair. To increase seat belt use among persons currently employed, states can enact and enforce primary seat belt laws, employers can set and enforce safety policies requiring seat belt use by all vehicle occupants, and seat belt safety advocates can target interventions to workers in occupational groups with lower reported seat belt use.

BRFSS is an annual, state-based, random-digit-dialed land-line and cell phone survey of noninstitutionalized adults aged ≥18 years residing in the United States.<sup>¶</sup> In 2013, all states asked survey participants about seat belt use.\*\* Industry and occupation were first available on the BRFSS survey in 2013,

and 21 states asked currently employed respondents about their industry and occupation.<sup>††</sup> This report describes self-reported seat belt use by occupational group among workers in those 21 states who were employed for wages or self-employed at the time of the interview. All responses to the question about frequency of seat belt use except “always” (i.e., “nearly always,” “sometimes,” “seldom,” and “never”) were combined and categorized as “not always.” Participants' responses were coded to 2002 U.S. Census Bureau occupation numeric codes. Census occupation codes were then grouped for analysis into 2000 Standard Occupational Classification (SOC) System major groups. Records with missing occupation codes or that were not able to be coded because of insufficient information were excluded, as were records where the seat belt responses

<sup>††</sup> Occupation was elicited by the question, “What kind of work do you do (for example, registered nurse, janitor, cashier, auto mechanic)?”

### INSIDE

- 598 Disparities in Adolescents' Residence in Neighborhoods Supportive of Physical Activity — United States, 2011–2012
- 602 Male Attendance at Title X Family Planning Clinics — United States, 2003–2014
- 606 Notes from the Field: Typhoid Fever Outbreak Associated with an Asymptomatic Carrier at a Restaurant — Weld County, Colorado, 2015
- 608 Notes from the Field: Strongyloidiasis at a Long-Term-Care Facility for the Developmentally Disabled — Arizona, 2015
- 610 Announcement
- 611 QuickStats

Continuing Education examination available at [http://www.cdc.gov/mmwr/cme/conted\\_info.html#weekly](http://www.cdc.gov/mmwr/cme/conted_info.html#weekly).

\* [http://www.bls.gov/iif/oshwc/foi/foi\\_revised13.pdf](http://www.bls.gov/iif/oshwc/foi/foi_revised13.pdf).

† <https://www.libertymutualgroup.com/about-lm/research-institute/communications/workplace-safety-index>.

§ <http://www-nrd.nhtsa.dot.gov/Pubs/812153.pdf>.

¶ <http://www.cdc.gov/brfss/>.

\*\* Seat belt use was elicited by the question, “How often do you use seat belts when you drive or ride in a car? Would you say—always, nearly always, sometimes, seldom, never?”



were blank, “don’t know/not sure,” “never drive or ride in a car,” or “refused.” Because BRFSS data are not representative of active duty service members, the 263 respondents who worked in the armed forces also were excluded.

Results were stratified by type of seat belt law in the state of residence because type of law is known to be associated with seat belt use (1,2). Fourteen of the 21 states had primary seat belt laws in 2013; in these states, a driver can be stopped and ticketed solely for not using a seat belt. Six states had secondary seat belt laws; in these states, a driver can be ticketed for not using a seat belt only if stopped for another offense. New Hampshire had no seat belt law covering adults<sup>§§</sup> and was grouped with the secondary law states.

Data were weighted and analyzed to account for the complex BRFSS multistage sampling design. The prevalence of not always using a seat belt was estimated by occupational group and sociodemographic characteristics. Adjusted prevalences, stratified by type of seat belt law, were estimated with logistic regression controlling for the potential confounders of age, sex, race/ethnicity, education, marital status, body mass index, and county urbanization. All statistically significant interaction terms between occupational group and confounders, including the interaction between occupational group and type of seat belt law, were included in the model. County of residence was classified as metropolitan (codes 1–3), urban (4–7), or rural

(8–9), based on the U.S. Department of Agriculture’s 2013 Rural-Urban Continuum Codes.<sup>¶¶</sup>

Among the 21 states, the overall survey response rates ranged from 31.1% to 59.2%.<sup>\*\*\*</sup> Data from 84,593 respondents were included in the analysis, including 54,187 (64%) who lived in states with primary seat belt laws and 30,406 (36%) who lived in states with secondary seat belt laws. The prevalence of not always using a seat belt varied by age, sex, race/ethnicity, education, marital status, body mass index, and county urbanization, and for each characteristic, was higher in states with secondary seat belt laws (Table 1).

For all occupational groups combined, the crude prevalence of not always using a seat belt was 10.4% in states with primary seat belt laws and 23.6% in states with secondary seat belt laws (Table 2). For every occupational group, the prevalence was higher in states with secondary seat belt laws. Crude prevalences ranged from 5.4% (business and financial operations) to 18.0% (construction and extraction) in the states with primary seat belt laws and from 8.1% (life, physical, and social science) to 55.5% (farming, fishing, and forestry) in states with secondary seat belt laws. Among workers in the transportation and material moving group, which includes several occupations that involve frequent driving, 12.4% and 33.7% in states with primary and secondary seat belt laws, respectively, did not always use a seat belt.

§§ <http://www.iihs.org/iihs/topics/laws/safetybeltuse?topicName=safety-belts>.

¶¶ <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx>.  
\*\*\* [http://www.cdc.gov/brfss/annual\\_data/2013/pdf/2013\\_dqr.pdf](http://www.cdc.gov/brfss/annual_data/2013/pdf/2013_dqr.pdf).

The *MMWR* series of publications is published by the Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

**Suggested citation:** [Author names; first three, then et al., if more than six.] [Report title]. *MMWR Morb Mortal Wkly Rep* 2016;65:[inclusive page numbers].

#### Centers for Disease Control and Prevention

Thomas R. Frieden, MD, MPH, *Director*  
Harold W. Jaffe, MD, MA, *Associate Director for Science*  
Joanne Cono, MD, ScM, *Director, Office of Science Quality*  
Chesley L. Richards, MD, MPH, *Deputy Director for Public Health Scientific Services*  
Michael F. Iademarco, MD, MPH, *Director, Center for Surveillance, Epidemiology, and Laboratory Services*

#### MMWR Editorial and Production Staff (Weekly)

Sonja A. Rasmussen, MD, MS, *Editor-in-Chief*  
Charlotte K. Kent, PhD, MPH, *Executive Editor*  
Jacqueline Gindler, MD, *Editor*  
Teresa F. Rutledge, *Managing Editor*  
Douglas W. Weatherwax, *Lead Technical Writer-Editor*  
Soumya Dunworth, PhD, Teresa M. Hood, MS,  
*Technical Writer-Editors*

Martha F. Boyd, *Lead Visual Information Specialist*  
Maureen A. Leahy, Julia C. Martinroe,  
Stephen R. Spriggs, Moua Yang, Tong Yang,  
*Visual Information Specialists*  
Quang M. Doan, MBA, Phyllis H. King, Terraye M. Starr,  
*Information Technology Specialists*

#### MMWR Editorial Board

Timothy F. Jones, MD, *Chairman*  
Matthew L. Boulton, MD, MPH  
Virginia A. Caine, MD  
Katherine Lyon Daniel, PhD  
Jonathan E. Fielding, MD, MPH, MBA  
David W. Fleming, MD

William E. Halperin, MD, DrPH, MPH  
King K. Holmes, MD, PhD  
Robin Ikeda, MD, MPH  
Rima F. Khabbaz, MD  
Phyllis Meadows, PhD, MSN, RN  
Jewel Mullen, MD, MPH, MPA

Jeff Niederdeppe, PhD  
Patricia Quinlisk, MD, MPH  
Patrick L. Remington, MD, MPH  
Carlos Roig, MS, MA  
William L. Roper, MD, MPH  
William Schaffner, MD

**TABLE 1. Prevalence\* of not always using a seat belt among currently employed workers, by selected characteristics and state seat belt law status — Behavioral Risk Factor Surveillance System, 21 states, 2013**

Characteristic	States with primary seat belt laws <sup>†</sup>		States with secondary seat belt laws <sup>§</sup>	
	No. in sample	Not always using seat belt % (95% CI)	No. in sample	Not always using seat belt % (95% CI)
<b>Age group (yrs)</b>				
18–24	2,753	19.9 (16.9–22.8)	1,671	33.3 (30.0–36.6)
25–34	7,232	13.1 (11.7–14.4)	4,353	27.9 (25.8–30.0)
35–44	10,010	9.2 (8.2–10.2)	5,579	21.1 (19.4–22.9)
45–54	14,304	8.4 (7.4–9.3)	7,590	21.4 (20.0–22.8)
55–64	14,346	7.5 (6.7–8.3)	8,037	19.6 (18.2–21.1)
≥65	5,542	6.8 (5.5–8.1)	3,176	21.3 (18.8–23.8)
<b>Sex</b>				
Men	24,770	13.3 (12.4–14.1)	14,622	30.1 (28.9–31.4)
Women	29,417	7.1 (6.4–7.7)	15,784	16.1 (15.1–17.0)
<b>Race/Ethnicity</b>				
White, non-Hispanic	41,022	10.8 (10.2–11.4)	27,048	24.2 (23.3–25.0)
Black, non-Hispanic	4,666	13.8 (11.3–16.2)	455	22.5 (15.7–29.4)
Other, non-Hispanic	2,962	8.1 (5.7–10.4)	1,305	20.4 (16.7–24.1)
Hispanic	4,778	8.3 (6.9–9.6)	1,300	19.1 (15.9–22.2)
<b>Education</b>				
Less than high school	2,534	11.2 (9.0–13.5)	1,063	33.5 (28.8–38.2)
High school graduate	12,356	13.2 (12.1–14.3)	7,406	31.9 (30.0–33.8)
Some college or technical school	15,034	11.4 (10.3–12.4)	8,972	25.8 (24.4–27.3)
College graduate or more	24,192	7.2 (6.5–7.9)	12,923	14.3 (13.4–15.2)
<b>Marital status</b>				
Married	31,262	8.4 (7.7–9.0)	19,086	20.3 (19.5–21.2)
Divorced, widowed, or separated	11,585	9.6 (8.5–10.6)	5,667	24.6 (22.5–26.7)
Never married or a member of an unmarried couple	11,089	14.9 (13.6–16.2)	5,538	30.6 (28.6–32.7)
<b>Body mass index</b>				
Underweight or normal	17,679	9.8 (8.8–10.9)	10,070	19.6 (18.3–20.9)
Overweight	19,256	10.2 (9.3–11.0)	10,963	24.4 (23.0–25.8)
Obese	15,029	11.7 (10.7–12.6)	8,041	29.8 (28.1–31.6)
<b>Metropolitan/Urban/Rural county of residence</b>				
Metropolitan	41,406	9.8 (9.2–10.4)	16,912	20.2 (19.2–21.2)
Urban	11,096	15.0 (13.6–16.4)	10,166	33.7 (32.3–35.1)
Rural	1,685	20.0 (16.4–23.6)	3,328	46.8 (44.5–49.2)

**Abbreviation:** CI = confidence interval.

\* Weighted estimates.

<sup>†</sup> California, Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, Mississippi, New Jersey, New Mexico, New York, Oregon, Washington, and Wisconsin (n = 54,187, 64% of respondents).

<sup>§</sup> Massachusetts, Montana, Nebraska, New Hampshire (no seat belt law), North Dakota, Utah, and Wyoming (n = 30,406, 36% of respondents).

Among all occupational groups, the adjusted prevalence of not always using a seat belt was higher in states with secondary seat belt laws. The highest adjusted prevalences in states with primary seat belt laws were observed in the construction and extraction (14.1%); legal (14.0%); installation, maintenance, and repair (12.8%); protective service (12.7%); and farming, fishing, and forestry (12.7%) occupational groups. In states with secondary seat belt laws, the highest adjusted prevalences were in the farming, fishing, and forestry (38.1%); construction and extraction (32.1%); installation, maintenance, and repair (27.0%); building and grounds cleaning and maintenance (25.9%); and protective service (25.4%) occupational groups. Percentage-point differences between adjusted prevalences of states with primary and secondary seat belt laws ranged from a low of 2.0 (life, physical, and, social science) to a high of 25.5 (farming, fishing, and forestry) (Table 2).

## Discussion

This analysis provides, for the first time, seat belt use estimates among a wide variety of occupational groups in 21 U.S. states. It indicates that self-reported seat belt use among adult workers in those states varies by occupation and that this variation persists after adjustment for factors known to be associated with seat belt use (age, sex, race/ethnicity, education, marital status, body mass index, county urbanization, and state seat belt law type). Overall and by occupational group, in 2013, seat belt use among employed adults was lower in states that did not have primary seat belt laws.

Limited data are available on work-related seat belt use. A CDC study found that approximately 14% of long-haul truck drivers did not use a seat belt on every trip and that never using a seat belt at work was associated with living in a state that did not have a primary seat belt law (3).

**TABLE 2. Prevalence\* of not always using a seat belt among currently employed workers, by occupational group† and state seat belt law status, ranked from lowest to highest crude prevalence among states with primary seat belt laws — Behavioral Risk Factor Surveillance System, 21 states, 2013**

Occupational group	States with primary seat belt laws <sup>§</sup>			States with secondary seat belt laws <sup>¶</sup>			Percentage-point difference in adjusted % between primary and secondary law states
	No. in sample	Not always using seat belt, crude % (95% CI)	Not always using seat belt, adjusted** % (95% CI)	No. in sample	Not always using seat belt, crude % (95% CI)	Not always using seat belt, adjusted** % (95% CI)	
Business and financial operations	2,572	5.4 (4.0–6.7)	7.0 (5.4–9.0)	1,273	14.1 (11.4–16.9)	16.9 (13.9–20.4)	-9.9
Life, physical, and social science	1,014	6.2 (3.5–8.9)	8.1 (5.3–12.4)	519	8.1 (5.5–10.7)	10.1 (7.4–13.8)	-2.0
Architecture and engineering	1,481	6.3 (4.3–8.4)	6.6 (4.7–9.1)	797	15.7 (12.0–19.3)	14.9 (11.6–18.9)	-8.3
Health care practitioners and technical	4,658	6.7 (4.8–8.6)	9.1 (6.8–12.1)	2,530	15.1 (12.6–17.5)	19.2 (16.5–22.3)	-10.1
Education, training, and library	4,549	6.9 (5.1–8.7)	10.2 (7.8–13.1)	2,648	11.5 (9.7–13.4)	15.0 (12.6–17.8)	-4.8
Computer and mathematical	1,639	7.4 (5.0–9.9)	7.7 (5.5–10.7)	839	14.3 (10.3–18.4)	14.4 (10.8–18.8)	-6.6
Office and administrative support	6,561	8.1 (6.9–9.4)	9.5 (8.0–11.2)	3,692	17.7 (15.8–19.7)	18.4 (16.2–20.7)	-8.9
Healthcare support	1,353	9.2 (6.2–12.2)	9.8 (7.0–13.6)	733	21.1 (16.6–25.6)	20.6 (16.3–25.7)	-10.8
Community and social services	1,342	9.4 (6.1–12.7)	11.7 (8.1–16.7)	658	16.1 (11.8–20.4)	19.9 (15.5–25.3)	-8.2
Personal care and service	1,843	9.7 (5.4–14.0)	10.1 (6.7–15.0)	928	21.3 (16.3–26.4)	20.3 (15.6–26.0)	-10.2
Management	5,891	9.7 (8.4–11.0)	10.6 (9.1–12.2)	3,917	26.3 (24.1–28.6)	24.9 (22.6–27.2)	-14.3
Legal	895	9.8 (6.2–13.5)	14.0 (9.8–19.6)	333	14.6 (9.2–19.9)	20.6 (14.4–28.6)	-6.6
Sales and related	5,077	10.6 (9.0–12.1)	10.1 (8.7–11.8)	2,728	25.7 (23.0–28.4)	23.0 (20.5–25.8)	-12.9
Production	2,264	11.2 (9.0–13.4)	9.4 (7.7–11.4)	1,307	31.0 (26.9–35.1)	24.4 (21.0–28.1)	-15.0
Farming, fishing, and forestry	420	12.2 (7.6–16.8)	12.7 (8.7–18.1)	311	55.5 (47.1–63.8)	38.1 (29.7–47.3)	-25.5
Arts, design, entertainment, sports, and media	1,350	12.4 (6.3–18.6)	12.3 (7.4–19.8)	613	16.3 (11.9–20.7)	18.0 (13.5–23.7)	-5.7
Building and grounds cleaning and maintenance	2,027	12.4 (9.1–15.8)	11.6 (8.8–15.2)	973	28.8 (23.9–33.8)	25.9 (21.6–30.7)	-14.2
Transportation and material moving	2,328	12.4 (10.0–14.8)	10.6 (8.7–12.9)	1,426	33.7 (29.6–37.9)	25.0 (21.5–28.9)	-14.4
Food preparation and serving related	1,748	14.7 (11.4–17.9)	11.2 (8.7–14.2)	867	27.0 (21.9–32.1)	21.0 (16.8–25.9)	-9.8
Protective service	1,188	15.7 (11.7–19.7)	12.7 (9.6–16.7)	531	34.8 (26.8–42.7)	25.4 (18.9–33.3)	-12.7
Installation, maintenance, and repair	1,518	16.2 (12.9–19.5)	12.8 (10.3–15.8)	991	38.4 (32.9–43.8)	27.0 (22.7–31.9)	-14.2
Construction and extraction	2,469	18.0 (15.4–20.7)	14.1 (12.0–16.4)	1,792	43.7 (39.9–47.5)	32.1 (28.6–35.8)	-18.0
<b>All occupational groups</b>	<b>54,187</b>	<b>10.4 (9.9–10.9)</b>	—	<b>30,406</b>	<b>23.6 (22.8–24.4)</b>	—	—

**Abbreviation:** CI = confidence interval.

\* Weighted estimates.

† From the 2000 Standard Occupational Classification System. <http://www.bls.gov/soc/>.

§ California, Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, Mississippi, New Jersey, New Mexico, New York, Oregon, Washington, and Wisconsin (n = 54,187, 64% of respondents).

¶ Massachusetts, Montana, Nebraska, New Hampshire (no seat belt law), North Dakota, Utah, and Wyoming (n = 30,406, 36% of respondents).

\*\* Adjusted by age group, sex, race/ethnicity, education, marital status, body mass index, urban/rural county of residence, and state seat belt law type.

The current report estimates that workers in several groups with occupations for which driving is not a primary job duty (including construction and extraction; farming, fishing, and forestry; installation, maintenance, and repair; and protective service) report lower frequency of seat belt use than workers in transportation and material moving occupations. Previous research has suggested lower seat belt use rates among construction workers and occupants of commercial light vehicles (4), particularly pick-up trucks (5,6), and that police officers might view seat belt use as a safety concern in high threat situations (7). However, it is possible that not enough attention has been directed toward promoting seat belt use among the 14 million workers in these broad categories because driving is not their primary job duty.

The findings in this report are subject to at least five limitations. First, seat belt use is self-reported, which, because of social desirability bias, might result in higher reported frequency of seat belt use than that reported in observational studies. Second, this

analysis does not distinguish between work-related and personal driving, and there is evidence from one study that frequency of seat belt use among commercial motor vehicle drivers is higher when driving a personal vehicle than when engaged in work-related driving (4). Third, the seat belt use question says “car”; it is not known whether respondents who drive vehicles other than cars (e.g., trucks) interpreted “car” to include other vehicles. Fourth, households without telephones are excluded from BRFSS; however, this should have a minimal impact on the findings because only an estimated 2.5% of households do not have telephones.††† Finally, because the overall survey response rates among the 21 states ranged from 31.1% to 59.2%, nonresponse bias is possible.

Because seat belt laws are strongly associated with seat belt use (1,8), states that implement new primary seat belt laws might see a substantial increase in seat belt use by all drivers, including currently employed workers; this would benefit

††† [http://www.cdc.gov/brfss/annual\\_data/2013/pdf/overview\\_2013.pdf](http://www.cdc.gov/brfss/annual_data/2013/pdf/overview_2013.pdf).

**Summary****What is already known about this topic?**

Although motor vehicle crashes are the leading cause of occupational fatalities, and seat belts have been shown to reduce injuries, previous reports on worker seat belt use have been narrowly focused on only a few occupations.

**What is added by this report?**

This is the first report on seat belt use among a broad range of occupational groups in a representative, population-based sample. For all occupational groups, the prevalence of not always using seat belts was higher in states with secondary seat belt laws (23.6% unadjusted) than in states with primary seat belt laws (10.4% unadjusted). After adjusting for age, sex, race/ethnicity, education, marital status, body mass index, county urbanization, and state seat belt law type, there was substantial variability among occupational groups in self-reported seat belt use. The occupational groups with the highest adjusted prevalences included construction and extraction (14.1%); legal (14.0%); installation, maintenance, and repair (12.8%); protective service (12.7%); and farming, fishing, and forestry (12.7%).

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

Employers can establish comprehensive safety programs that require consistent seat belt use at all times. States that implement primary seat belt laws might see a substantial increase in seat belt use by currently employed workers. Seat belt safety advocates could focus interventions on the occupational groups with the lowest reported seat belt use.

employers, workers, and the general public. Employers can reduce injuries among workers by implementing comprehensive safety programs that require seat belt use at all times for employees and contractors (drivers and passengers) and reinforcing this policy in training programs (3,6,9,10).<sup>§§§</sup> Although many of the workers in occupations with low rates of seat belt use might be self-employed or work in small businesses that do not have comprehensive safety programs, it would still be beneficial for employers to focus on seat belt safety. Employers and seat belt safety advocates might consider developing additional interventions directed at workers in the occupations with the lowest self-reported seat belt use.

<sup>§§§</sup> CDC. Preventing work-related motor vehicle crashes. DHHS (NIOSH) publication no. 2015-111. March 2015. <http://www.cdc.gov/niosh/docs/2015-111/>.

**Acknowledgments**

Jan Birdsey, Susan Burton, Stephanie Pratt, Jeff Purdin, Pam Schumacher, Aaron Sussell; 21 state BRFSS coordinators.

<sup>1</sup>Division of Surveillance, Hazard Evaluations and Field Studies, National Institute for Occupational Safety and Health, CDC; <sup>2</sup>Division of Safety Research, Center for Motor Vehicle Safety, National Institute for Occupational Safety and Health, CDC.

Corresponding author: Winifred L. Boal, [wboal@cdc.gov](mailto:wboal@cdc.gov), 513-841-4266.

**References**

1. CDC. Vital signs: nonfatal, motor vehicle–occupant injuries (2009) and seat belt use (2008) among adults—United States. *MMWR Morb Mortal Wkly Rep* 2011;59:1681–6.
2. Beck LF, Shults RA, Mack KA, Ryan GW. Associations between sociodemographics and safety belt use in states with and without primary enforcement laws. *Am J Public Health* 2007;97:1619–24. <http://dx.doi.org/10.2105/AJPH.2006.092890>
3. Chen GX, Collins JW, Sieber WK, et al. Vital signs: seat belt use among long-haul truck drivers—United States, 2010. *MMWR Morb Mortal Wkly Rep* 2015;64:217–21.
4. Kim K, Yamashita EY. Attitudes of commercial motor vehicle drivers towards safety belts. *Accid Anal Prev* 2007;39:1097–106. <http://dx.doi.org/10.1016/j.aap.2007.02.007>
5. Eby DW, Fordyce TA, Vivoda JM. A comparison of safety belt use between commercial and noncommercial light-vehicle occupants. *Accid Anal Prev* 2002;34:285–91. [http://dx.doi.org/10.1016/S0001-4575\(01\)00024-0](http://dx.doi.org/10.1016/S0001-4575(01)00024-0)
6. Retzer KD, Hill RD, Pratt SG. Motor vehicle fatalities among oil and gas extraction workers. *Accid Anal Prev* 2013;51:168–74. <http://dx.doi.org/10.1016/j.aap.2012.11.005>
7. Oron-Gilad T, Szalma JL, Stafford SC, Hancock PA. Police officers seat belt use while on duty. *Transp Res, Part F Traffic Psychol Behav* 2005;8:1–18. <http://dx.doi.org/10.1016/j.trf.2004.10.005>
8. Shults RA, Nichols JL, Dinh-Zarr TB, Sleet DA, Elder RW. Effectiveness of primary enforcement safety belt laws and enhanced enforcement of safety belt laws: a summary of the Guide to Community Preventive Services systematic reviews. *J Safety Res* 2004;35:189–96. <http://dx.doi.org/10.1016/j.jsr.2004.03.002>
9. American National Standards Institute/American Society of Safety Engineers (ANSI/ASSE). *Safe practices for motor vehicle operations (ANSI/ASSE Z15.1–2012)*. New York, NY: American National Standards Institute; 2012.
10. Network of Employers for Traffic Safety. *NETS' comprehensive guide to road safety*. Vienna, VA: Network of Employers for Traffic Safety; 2014. <http://trafficsafety.org/nets-comprehensive-guide-to-road-safety-download>

## Disparities in Adolescents' Residence in Neighborhoods Supportive of Physical Activity — United States, 2011–2012

Kathleen B. Watson, PhD<sup>1</sup>; Carmen D. Harris, MPH<sup>2</sup>; Susan A. Carlson, PhD<sup>1</sup>; Joan M. Dorn, PhD<sup>3</sup>; Janet E. Fulton, PhD<sup>1</sup>

In 2013, only 27% of adolescents in grades 9–12 met the current federal guideline for aerobic physical activity (at least 60 minutes of physical activity each day\*), and sex and racial/ethnic disparities in meeting the guideline exist (1). The Community Preventive Services Task Force has recommended a range of community-level evidence-based approaches† to increase physical activity by improving neighborhood supports for physical activity.‡ To assess the characteristics of adolescents who live in neighborhoods that are supportive of physical activity, CDC analyzed data on U.S. children and adolescents aged 10–17 years (defined as adolescents for this report) from the 2011–2012 National Survey of Children's Health (NSCH). Overall, 65% of U.S. adolescents live in neighborhoods supportive of physical activity, defined as neighborhoods that are perceived as safe and have sidewalks or walking paths and parks, playgrounds, or recreation centers. Adolescents who were Hispanic and non-Hispanic black race/ethnicity; who lived in lower-income households, households with less educated parents, and rural areas; or who were overweight or obese were less likely to live in neighborhoods supportive of physical activity than were white adolescents and adolescents from higher income households, with a more highly educated parent, living in urban areas, and not overweight or obese. Within demographic groups, the largest disparity in the percentage of adolescents living in these neighborhoods was observed between adolescents living in households with a family income <100% of the Federal Poverty Level (FPL) (51%) and adolescents living in households with a family income ≥400% of the FPL (76%). Efforts to improve neighborhood supports, particularly in areas with a substantial percentage of low-income and minority residents, might increase physical activity among adolescents and reduce health disparities.

CDC used data from the 2011–2012 NSCH, a national- and state-representative, random-digit-dialed, cross-sectional telephone survey of households with at least one child aged 0–17 years living in the home at the time of the interview. Although data were collected for 95,677 households, body mass index for age was available only for persons aged 10–17 years; therefore, the sample was limited to the 45,309 households with

at least one child aged 10–17 years. The survey respondent (parent) was an adult in the household identified as “the parent or guardian who lives in this household who knows the most about the health and health care of the child.” Among households with two or more children, one child was randomly selected as the target of the interview. The NSCH interview completion rate was 54.1% for the landline sample and 41.2% for the cell phone sample.

The primary outcome measure, a neighborhood supportive of physical activity, was a composite measure derived from individual features related to perceived neighborhood safety; availability of sidewalks or walking paths; and the availability of parks, playgrounds, or recreation centers (2). A composite measure was used because different features are associated with different types of activity (e.g., walking for transportation versus being active in a park) (3) and a composite measure can capture the multiple influences on overall physical activity. Adolescents whose parent responded “usually” or “always” to the question, “How often do you feel {child's name} is safe in your community or neighborhood?” and affirmed that “sidewalks or walking paths” and either “a park or playground area” or “a recreation center, community center or boys' and girls' club” are available in their neighborhood were classified as living in a neighborhood supportive of physical activity.

Data were analyzed by demographic characteristics and weighted to provide estimates and standard errors for the proportion of adolescents living in neighborhoods supportive of physical activity. Pairwise t-tests ( $p < 0.05$ ) were used to compare the group with the largest proportion of adolescents living in a neighborhood supportive of physical activity (referent group) with all other groups.

Among the 45,309 households with at least one adolescent aged 10–17 years living at home, 4,351 (9.6%) were excluded because of missing demographic, neighborhood environment, and body mass index values, resulting in a final sample of 40,958 households. During 2011–2012, 65.4% of U.S. adolescents lived in neighborhoods that support physical activity (Table). Among racial/ethnic groups, the proportion of adolescents living in these neighborhoods was lower among non-Hispanic blacks (blacks; 60.0%) and Hispanics (61.6%) than among non-Hispanic whites (whites; 67.2%) and non-Hispanic multi/other races (70.1%). Among adolescents who lived in households with a parent whose highest level of education was a high school diploma or who did not graduate from high school, a lower percentage lived in neighborhoods that support physical

\* <http://health.gov/paguidelines>.

† Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities (<http://www.surgeongeneral.gov/library/calls/walking-and-walkable-communities/>).

‡ <http://www.thecommunityguide.org/pa/environmental-policy/index.html>.

**TABLE. Disparities in the proportion of U.S. adolescents aged 10–17 years living in a neighborhood that supports physical activity, by selected characteristics — National Survey of Children’s Health, 2011–2012**

Characteristic	All adolescents	Adolescents living in a neighborhoods supportive of physical activity*	
	No. (% <sup>†</sup> )	% <sup>†</sup> (SE)	Amount of disparity <sup>§</sup>
<b>Total</b>	<b>40,958 (100.0)</b>	<b>65.4 (0.5)</b>	—
<b>Sex</b>			
Male	21,386 (51.5)	65.6 (0.8)	Referent
Female	19,572 (48.5)	65.2 (0.8)	0.3
<b>Age group (yrs)</b>			
10–12	14,651 (36.6)	64.2 (0.9)	1.9
13–17	26,307 (63.4)	66.1 (0.7)	Referent
<b>Race/Ethnicity</b>			
White, non-Hispanic	28,913 (58.2)	67.2 (0.6)	Referent
Black, non-Hispanic	3,745 (14.1)	60.0 (1.5)	7.2 <sup>¶</sup>
Hispanic	4,286 (18.4)	61.6 (1.8)	5.6 <sup>¶</sup>
Multi/Other, non-Hispanic	4,014 (9.3)	70.1 (1.7)	N/A <sup>**</sup>
<b>Highest household education<sup>††</sup></b>			
Less than a high school graduate	6,191 (21.1)	56.2 (1.5)	14.5 <sup>¶</sup>
High school graduate only	15,146 (34.4)	64.2 (0.8)	6.5 <sup>¶</sup>
More than high school graduate	19,621 (44.5)	70.7 (0.7)	Referent
<b>Household income (% FPL)</b>			
<100	4,694 (16.5)	51.1 (1.5)	24.8 <sup>¶</sup>
100–199	6,751 (20.8)	58.8 (1.4)	17.1 <sup>¶</sup>
200–399	13,067 (30.4)	66.6 (0.9)	9.3 <sup>¶</sup>
≥400	16,446 (32.3)	75.9 (0.7)	Referent
<b>Geographic location</b>			
Urban	32,703 (89.0)	66.5 (0.6)	Referent
Rural	8,255 (11.0)	56.8 (1.3)	9.7 <sup>¶</sup>
<b>Body mass index category<sup>§§</sup></b>			
Underweight/Healthy weight	29,242 (69.3)	67.4 (0.6)	Referent
Overweight/Obese	11,716 (30.7)	60.9 (1.1)	6.5 <sup>¶</sup>

**Abbreviations:** FPL = Federal Poverty Level; N/A = not applicable; SE = standard error.

\* Neighborhood supportive of physical activity is defined as the parent feeling the adolescent is usually or always safe in the neighborhood or community; walking paths or sidewalks are present in the neighborhood; and parks, recreation centers, or boys’ and girls’ clubs are present in the neighborhood.

<sup>†</sup> Weighted proportion.

<sup>§</sup> Measured as percentage point difference from referent group, which is the group with the highest proportion living in a neighborhood supportive of physical activity.

<sup>¶</sup> Significant pairwise difference at  $p < 0.05$ .

<sup>\*\*</sup> Multi/other, non-Hispanic not included in disparity comparison because the racial/ethnic characteristics of this group were heterogeneous.

<sup>††</sup> Highest level of parental education in the household.

<sup>§§</sup> All adolescents were assumed to be at the midpoint of their age-year for this calculation. Body mass index for age is based on parent’s recall of the selected adolescent’s height and weight. Underweight/healthy weight = <85th percentile; overweight/obese = ≥85th percentile ([http://www.cdc.gov/growthcharts/cdc\\_charts.htm](http://www.cdc.gov/growthcharts/cdc_charts.htm)).

activity (64.2% and 56.2%, respectively), compared with adolescents living in households with a parent with more than a high school education (70.7%). The proportion of adolescents living in a neighborhood that supports physical activity was lower among adolescents with household income <100% of the FPL (51.1%), 100%–199% of the FPL (58.8%), and 200%–399% of the FPL (66.6%), than among adolescents with household incomes ≥400% of the FPL (75.9%). By geographic location, the proportion of adolescents living in neighborhoods that support physical activity was lower among rural residents (56.8%) than among adolescents living in urban areas (66.5%). By BMI, the proportion of adolescents living in neighborhoods that support physical activity was lower among overweight or obese adolescents (60.9%) than adolescents who were underweight or at a healthy weight (67.4%).

## Discussion

Approximately two thirds of U.S. adolescents live in neighborhoods that are supportive of physical activity; however, racial/ethnic, socioeconomic, and health disparities exist. A lower proportion of Hispanic and black adolescents and adolescents who were overweight or obese lived in these types of neighborhoods than did their white and underweight or healthy weight counterparts. A lower proportion of adolescents living in these neighborhoods also resided in a lower-income household, a household with less educated parents, or in a rural area than adolescents who resided in more socioeconomically advantaged households or in urban areas.

Various reasons for disparities in the neighborhood environment have been proposed, including poverty, residential segregation, disinvestment of economic resources, and poor

quality housing (4). Infrastructure, such as street lighting and sidewalks, might not be as available or well maintained in poor neighborhoods as in affluent neighborhoods (4).

This report uses national data and a composite measure of perceived neighborhood features to demonstrate disparities in the proportion of adolescents living in neighborhoods that support physical activity. A composite measure provides a more comprehensive picture of the perceived neighborhood environment. For example, although sidewalks might be available in a neighborhood, parents might perceive that it is unsafe for a child to use the sidewalks. If there are no sidewalks to get to a nearby park, a child might not be able to use the park without taking public transportation or riding in a private vehicle. A previous study used the same data for children and adolescents age 0–17 years and reported a positive association between FPL and both living in a safe neighborhood and living in a neighborhood with sidewalks (2). When stratified by race and ethnicity, more black and Hispanic adolescents aged 0–17 years lived in neighborhoods with sidewalks (82.5% and 77.1%, respectively), compared with white (73.6%) children (2). However, fewer black and Hispanic adolescents aged 0–17 years lived in neighborhoods that were safe (77.0% and 77.2%, respectively), compared with white (93.2%) adolescents (2).

Another national study reported that 68.4% of high school students had playgrounds, parks, or gyms close to their home and 73.5% lived in a neighborhood that was safe for autonomous physical activity (5). Findings from these studies highlight some of the challenges facing investigators assessing the neighborhood environment and how results might differ when using slightly different constructs (e.g., “safe for autonomous physical activity” compared with “safe neighborhood”) and when reporting individual neighborhood features compared with a composite measure. Access to some neighborhood features that support physical activity, such as sidewalks, might be more common in low-income, minority, and highly urbanized areas (6); however, access to sidewalks that are safe and well maintained in these areas might be lacking (6). Even with well-maintained sidewalks, in some cases, safety concerns, such as higher crime rates or broken windows, alone might explain why a neighborhood is not supportive of physical activity (6).

This study is subject to at least three limitations. First, neighborhood features were measured by parent perception, which could lead to under- or overestimating the presence of these supports. However, one study of perceptions of caregivers of young children from high- and low-risk areas found parent-reported perceptions of the neighborhood environment to be reliable (7). Parents’ perception of neighborhood features is relevant to adolescent behavior because parents typically decide whether their adolescent, particularly a young adolescent, is allowed to play at the park, walk or bike to school, or use neighborhood

## Summary

### What is already known about this topic?

Physical activity has health benefits for persons of all ages. Currently, approximately one in four youths is active enough to meet the aerobic physical activity guideline. Strategies to improve the built environment, such as ensuring the safety and availability of sidewalks or locating parks and recreation facilities nearby, are recommended approaches to promote physical activity.

### What is added by this report?

During 2011–2012, approximately two thirds of adolescents aged 10–17 years lived in a neighborhood supportive of physical activity, based on a composite measure derived from parental perceived neighborhood safety; availability of sidewalks or walking paths; and the availability of parks, playgrounds, or recreation centers. The proportion of adolescents living in neighborhoods supportive of physical activity was lower among adolescents who were non-Hispanic black or Hispanic, overweight or obese, from households with lower socioeconomic status (less educated, lower income), or from rural areas.

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

All children and adolescents should have access to opportunities to be physically active. Creating or enhancing programs and strategies aimed at increasing physical activity might reduce disparities. Programs and strategies include ensuring that neighborhoods are safe and have well-maintained sidewalks and parks or recreation facilities nearby, especially in areas with a higher concentration of minority, low-income, and less educated residents and in rural areas.

recreation locations (8). Second, because NCSH did not assess time spent in both moderate and vigorous intensity physical activity, disparities in the association between neighborhood features that support physical activity and time spent in physical activity by population groups were not examined. Finally, response bias might have affected the results because the NSCH interview completion rate was only 54.1% for the landline sample and 41.2% for the cell phone sample.

Additional studies exploring community-based strategies that best support physical activity in low-income, minority, and rural areas are needed. Community strategies, including creating or enhancing access to places for physical activity, are important because of the potential for extensive reach, effectiveness, and sustainability (9). Improving access to local opportunities to be physically active might be particularly important for adolescents who do not drive, whose parents limit where they may go, and who therefore spend a considerable amount of time in their neighborhoods (10). Ensuring that neighborhoods are safe and have well-maintained sidewalks and parks nearby are examples of programs and strategies aimed at increasing physical activity through improvements to the

built environment. Focusing these efforts in areas with higher concentrations of minority, low-income, and less educated populations and those in rural areas might help to reduce disparities in neighborhood support for physical activity.

<sup>1</sup>Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, CDC; <sup>2</sup>America's Essential Hospitals, Washington, DC; <sup>3</sup>City College of New York.

Corresponding author: Kathleen B. Watson, KWatson@cdc.gov, 770-488-5489.

## References

1. US Department of Health and Human Services. Healthy people 2020: physical activity. Washington, DC: US Department of Health and Human Services; 2014. <https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity>
2. National Physical Activity Plan Alliance. United States report card on physical activity for children and youth. Columbia, SC: National Physical Activity Plan Alliance; 2014. [http://www.physicalactivityplan.org/reportcard/NationalReportCard\\_longform\\_final%20for%20web.pdf](http://www.physicalactivityplan.org/reportcard/NationalReportCard_longform_final%20for%20web.pdf)
3. Rosenberg D, Ding D, Sallis JF, et al. Neighborhood Environment Walkability Scale for Youth (NEWS-Y): reliability and relationship with physical activity. *Prev Med* 2009;49:213–8. <http://dx.doi.org/10.1016/j.ypmed.2009.07.011>
4. Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep* 2001;116:404–16. [http://dx.doi.org/10.1016/S0033-3549\(04\)50068-7](http://dx.doi.org/10.1016/S0033-3549(04)50068-7)
5. Lowry R., Lee S, Fulton J, Demissie Z, Kann L. Obesity and other correlates of physical activity and sedentary behaviors among US high school students. *J Obes* 2013;2013:276318.
6. Taylor W, Lou D. Do all children have places to be active? Disparities in access to physical activity environments in racial and ethnic minority and lower-income communities. Princeton, NJ: Active Living Research; 2011. [http://activelivingresearch.org/sites/default/files/Synthesis\\_Taylor-Lou\\_Disparities\\_Nov2011\\_0.pdf](http://activelivingresearch.org/sites/default/files/Synthesis_Taylor-Lou_Disparities_Nov2011_0.pdf)
7. Coulton C, Korbin J, Su M. Measuring neighborhood context for young children in an urban area. *Am J Community Psychol* 1996;24:5–32. <http://dx.doi.org/10.1007/BF02511881>
8. Carson V, Kuhle S, Spence JC, Veugelers PJ. Parents' perception of neighbourhood environment as a determinant of screen time, physical activity and active transport. *Can J Public Health* 2010;101:124–7.
9. CDC. Strategies to prevent obesity and other chronic diseases: the CDC guide to strategies to increase physical activity in the community. Atlanta, GA: US Department of Health and Human Services, CDC; 2011. [http://www.cdc.gov/obesity/downloads/PA\\_2011\\_WEB.pdf](http://www.cdc.gov/obesity/downloads/PA_2011_WEB.pdf)
10. Smith AL, Troped PJ, McDonough MH, DeFreese JD. Youth perceptions of how neighborhood physical environment and peers affect physical activity: a focus group study. *Int J Behav Nutr Phys Act* 2015;12:80. <http://dx.doi.org/10.1186/s12966-015-0246-9>

## Male Attendance at Title X Family Planning Clinics — United States, 2003–2014

Ghenet Besera, MPH<sup>1</sup>; Susan Moskosky, MS<sup>2</sup>; Karen Pazol, PhD<sup>1</sup>; Christina Fowler, PhD<sup>3</sup>; Lee Warner, PhD<sup>1</sup>; David M. Johnson, MPH<sup>2</sup>; Wanda D. Barfield, MD<sup>1</sup>

Although both men and women have reproductive health care needs, family planning providers traditionally focus services toward women (1,2). Challenges in providing family planning services to men, including preconception health, infertility, contraceptive, and sexually transmitted disease (STD) care (3,4), include their infrequent use of preventive health services, a perceived lack of need for these services (1,5), and the lack of provider guidance regarding men's reproductive health care needs (4). Since 1970, the National Title X Family Planning Program has provided cost-effective and confidential family planning and related preventive health services with priority for services to low-income women and men. To examine men's use of services at Title X service sites, CDC and the U.S. Department of Health and Human Services' Office of Population Affairs (OPA) analyzed data from the 2003–2014 Family Planning Annual Reports (FPAR), annual data that are required of all Title X-funded agencies. During 2003–2014, 3.8 million males visited Title X service sites in the United States and the percentage of family planning users who were male nearly doubled from 4.5% (221,425 males) in 2003 to 8.8% (362,531 males) in 2014. In 2014, the percentage of family planning users who were male varied widely by state, ranging from ≤1% in Mississippi, Tennessee, and Alabama to 27.2% in the District of Columbia (DC). Title X service sites are increasingly providing services for males. Health care settings might want to adopt the framework employed by Title X clinics to better provide family planning and related preventative services to men (3).

To describe male client attendance at service sites funded under the National Title X Family Planning Program, CDC and OPA analyzed data from the 2003–2014 FPAR.\* FPAR contains data from all entities that receive Title X grants to support the delivery of family planning and related preventive health services. In 2014, about four million clients were served through approximately 4,100 Title X service sites. Data were included from Title X service sites in the 50 states and DC and used to describe 1) trends in the percentage of family planning users who were male; 2) state-level variation in the percentage of family planning users who were male; 3) demographic characteristics of males who were family planning users; 4) percentage of males who adopted or continued use

of a contraceptive method and method type; and 5) receipt of testing for chlamydia, gonorrhea, syphilis, and human immunodeficiency virus (HIV) among males. A family planning user was defined as a person who had at least one family planning encounter at a Title X service site in a calendar year, where an encounter consists of a documented, face-to-face contact with a family planning provider for the purpose of delivering services to clients who want to avoid unintended pregnancies or achieve intended pregnancies. For the purposes of inclusion in FPAR, written documentation of the services provided during the family planning encounter in the client record is required.

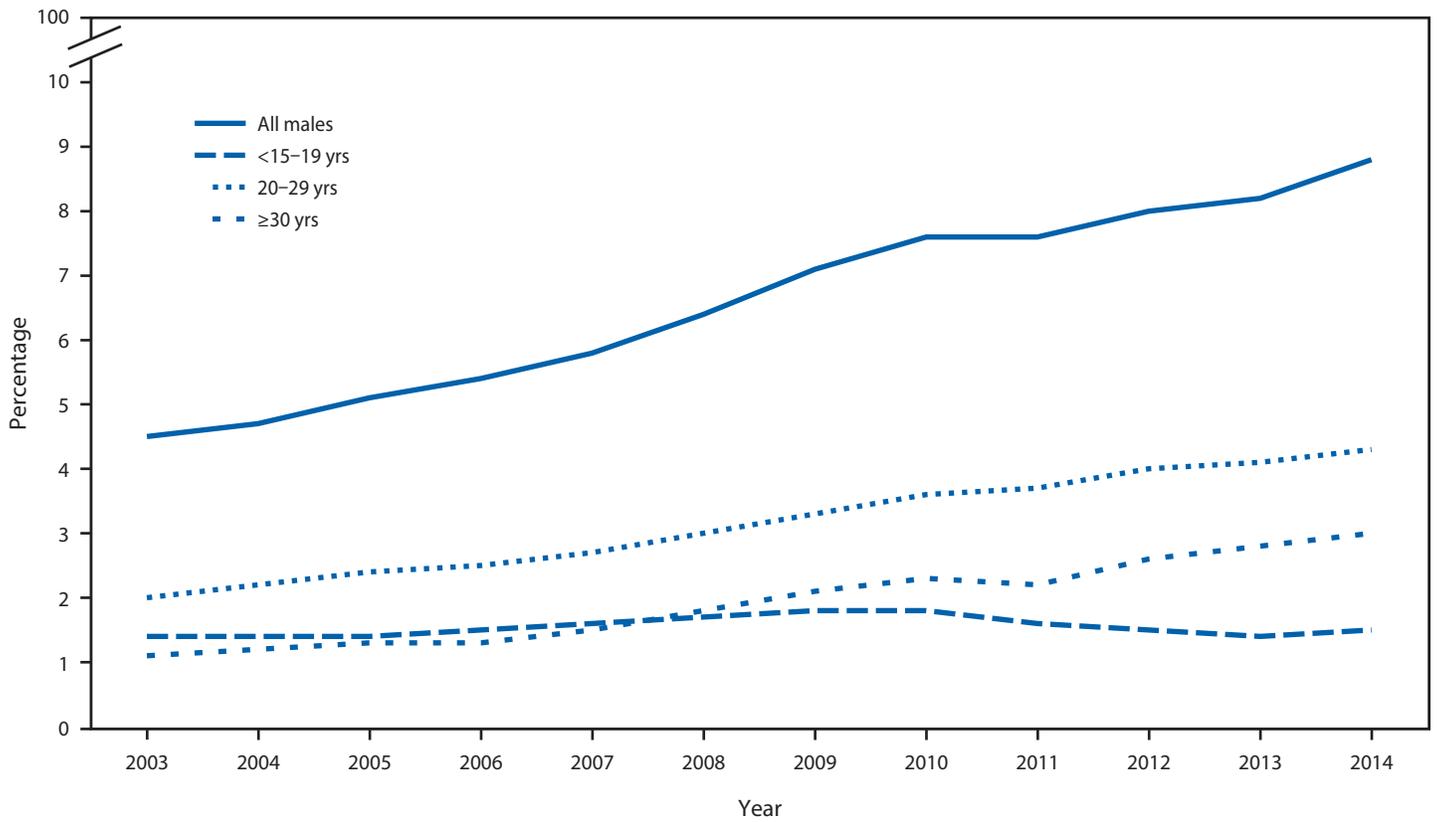
During 2003–2014, a total of 3.8 million males visited Title X service sites, and the percentage of family planning users who were male nearly doubled from 4.5% in 2003 to 8.8% in 2014 (Figure 1). The percentage of family planning users who were male increased each year during 2003–2014, with the exception of 2010–2011, when no change was observed (Figure 1). Among males aged 20–29 years, an increase occurred every year during 2003–2014, and among males aged ≥30 years, an increase occurred every year except 2011. In contrast, the percentage of users who were male and aged <20 years peaked in 2009 and 2010 at 1.8% and subsequently decreased (Figure 1). There was also a 63.7% increase in the overall number of male clients visiting Title X service sites from 221,425 in 2003 to 362,531 in 2014.

In 2014, 34.6% of male family planning users were white, 27.6% were Hispanic, and 24.2% were black. Approximately half of male users (49.0%) were aged 20–29 years, with lower percentages aged 30–39 years (20.4%) and 15–19 years (14.4%) (Table). By state, there was wide variation in the percentage of total family planning users who were male, from lows in Mississippi (0.7%), Tennessee (0.7%), and Alabama (1.0%) to highs in Rhode Island (16.1%), Delaware (19.1%), and DC (27.2%) (Figure 2).

The majority (87.5%) of male users adopted or continued use of a contraceptive method at the conclusion of their last family planning encounter in 2014, with the male condom being the most common (71.9%). Two thirds of males (66.6%) were tested for chlamydia. Receipt of chlamydia testing was highest among males aged 20–24 years (76.9%) and lowest among males aged <15 years (15.5%) (Table). In 2014, for every 10 male family planning users overall, Title X service sites also performed 7.5 gonorrhea tests, 3.3 syphilis tests, and

\* <http://www.hhs.gov/opa/title-x-family-planning/research-and-data/fp-annual-reports>.

FIGURE 1. Trends in the percentage of family planning users who were male, Title X service sites — United States, 2003–2014



5.7 confidential HIV tests. By state, for every 10 male family planning users, the number of gonorrhea tests performed ranged from 0.7 (New Mexico) to 10.7 (Delaware); the number of syphilis tests performed ranged from 0.02 (New Mexico) to 9.5 (Alabama); and the number of HIV tests performed ranged from 0.02 (New Mexico) to 9.3 (Alabama).

### Discussion

Although women continue to represent >90% of Title X family planning clients, the percentage of family planning users who are men is increasing. During 2003–2014, the percent of family planning users who were men nearly doubled, with the most consistent increases occurring among men aged 20–29 and ≥30 years. During the past 15 years, OPA has aimed to increase the number of men who use Title X services by funding projects and training to improve outreach and male-centered appropriate service delivery (6).

In 2014, CDC and OPA published *Providing Quality Family Planning Services: Recommendations of CDC and the U.S. Office of Population Affairs*, which describes services that should be offered in a family planning visit, and guidance for providing those services to both men and women (3). Recommended services for men include education and counseling on a range of issues related to preventing or achieving pregnancy, including,

but not limited to, preconception health, infertility, contraception, and STD and HIV care (3). Preconception health, infertility, and STD and HIV services are included as family planning services because they improve the overall health of women and men and can influence their ability to conceive or have a healthy birth outcome (3). Title X sites also connect men with broader primary care services, through referral or direct provision of services.

These recommendations can be used by providers to offer family planning services to men, thereby improving their access to sexual and reproductive health care (3,4). Family planning services are embedded within a broader framework of services, such that providers assess the client's need for related preventive services even when the primary reason for their visit relates to preventing or achieving pregnancy (3). The recommendations are also designed to optimize opportunities to provide men with reproductive health services by converting a standalone visit (e.g., a complaint related to an STD) to a more comprehensive family planning visit that also addresses issues related to unintended pregnancy prevention (e.g., sexual risk, reproductive health planning, and contraception) (3,4). This approach is especially important for serving the family planning needs of men, who might not otherwise receive these services (4).

**TABLE.** Distribution of male family planning users by race/ethnicity, age group, chlamydia testing, and primary contraceptive method, Title X service sites — United States, 2014

Demographic characteristic	(%) N = 362,531
<b>Race/Ethnicity</b>	
Black*	24.2
Hispanic†	27.6
White*	34.6
Other‡	13.7
<b>Age group (yrs)</b>	
<15	2.5
15–19	14.4
20–24	27.0
25–29	22.0
30–34	13.0
35–39	7.4
≥40	13.8
<b>Services provided</b>	
<b>Tested for chlamydia</b>	
<b>Total</b>	<b>66.6</b>
<b>Age group (yrs)</b>	
<15	15.5
15–19	60.5
20–24	76.9
>24	65.4
<b>Primary contraceptive method</b>	
Vasectomy	0.8
Male condom	71.9
Rely on female method	6.0
Abstinence	5.8
Other¶	3.0
<b>Total</b>	<b>87.5</b>
Method unknown or not reported	5.7
No method**	6.8

\* Non-Hispanic or non-Latino.

† Persons identified as Hispanic might be of any race.

‡ Non-Hispanic or non-Latino: American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, unknown, and multiple race; unknown/not reported ethnicity.

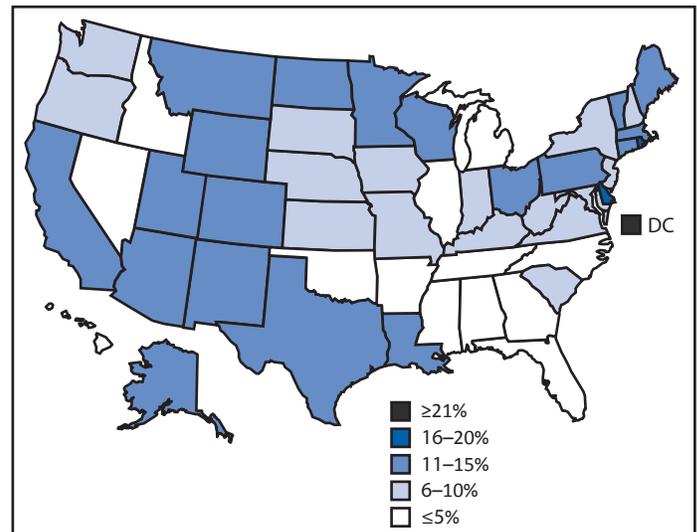
¶ Other methods include fertility awareness-based methods, withdrawal, or any other method not included in the Family Planning Annual Report reporting table.

\*\* No primary method, either because their partners were pregnant or seeking pregnancy or for other reasons.

The findings that provision of male condoms and testing for STDs were common among male users of family planning services and that most male family planning clients were Hispanic or black are similar to those reported in other studies (7,8). Meeting men’s needs related to contraception and STD testing is essential, considering the role men can play in preventing unintended pregnancy and given the high rates of STDs among men, especially low-income and minority men (2,4,9). Addressing these needs as an opportunity to promote “dual protection” (i.e., preventing both unintended pregnancy and STD) benefits both men and their partners.

The findings in this report are subject to at least two limitations. First, because only summary information on a limited number of client characteristics is required to be collected from

**FIGURE 2.** Percentage of family planning users who were male, Title X service sites — United States, 2014



**Summary**

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

Although both men and women have reproductive health care needs, reproductive health services traditionally focus on women. Since 1970, the Title X program has provided family planning and related preventive health services with priority for services for low-income women and men. Most clients are women, but the Title X program also promotes use of clinics by men through delivery of male-focused health services.

**What is added by this report?**

Title X service sites have increasingly provided services to male clients. During 2003–2014, 3.8 million males visited Title X service sites in the United States and the percentage of all family planning users who were male nearly doubled from 4.5% (221,425) in 2003 to 8.8% (362,531) in 2014. In 2014, the percentage of family planning users who were male ranged widely by state from ≤1% in Mississippi, Tennessee, and Alabama to 27.2% in the District of Columbia.

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

Health care settings might want to adopt the framework employed by Title X clinics to better provide family planning and related preventive health services to men.

Title X grantees for the FPAR, certain types of client characteristics (e.g., sexual orientation and education) and services provided (e.g., preconception care and infertility) could not be assessed. Second, there are possible errors in reporting from service sites. However, using administrative data routinely reported by clinics eliminates the possibility of biases related to relying on client self-report, especially as it relates to sexual and reproductive health topics.

Meeting the sexual and reproductive health needs of men and women is important for improving their overall health. Although men's use of family planning services remains low compared with that of women, an increasing number of men seek family planning and related preventive health services at Title X service sites. To meet the needs of the growing number of male clients, these services should be offered using a client-centered, male-focused approach in health care settings (e.g., Federally Qualified Health Centers and urology and family practice health care settings) that provide sexual and reproductive services to men.

<sup>1</sup>National Center for Chronic Disease Prevention and Health Promotion, CDC;

<sup>2</sup>Office of Population Affairs, US Department of Health and Human Services, Rockville, Maryland; <sup>3</sup>RTI International, Research Triangle Park, North Carolina.

Corresponding author: Ghenet Besera, GBesera@cdc.gov, 770-488-6326.

### References

1. Kalmuss D, Tatum C. Patterns of men's use of sexual and reproductive health services. *Perspect Sex Reprod Health* 2007;39:74–81. <http://dx.doi.org/10.1363/3907407>
2. Sonfield A. Looking at men's sexual and reproductive health needs. *Guttmacher Rep Public Policy* 2002;5:7–10.
3. Gavin L, Moskosky S, Carter M, et al. Providing quality family planning services: recommendations of CDC and the U.S. Office of Population Affairs. *MMWR Recomm Rep* 2014;63(No. RR-4).
4. Marcell AV, Gavin LE, Moskosky SB, McKenna R, Rompalo AM. Developing federal clinical care recommendations for men. *Am J Prev Med* 2015;49(Suppl 1):S14–22. <http://dx.doi.org/10.1016/j.amepre.2015.03.006>
5. Chabot MJ, Lewis C, de Bocanegra HT, Darney P. Correlates of receiving reproductive health care services among U.S. men aged 15 to 44 years. *Am J Mens Health* 2011;5:358–66. <http://dx.doi.org/10.1177/1557988310395007>
6. Office of Population Affairs. Male family planning services. Washington, DC: US Department of Health and Human Services, Office of Population Affairs; 2016. <http://www.hhs.gov/opa/title-x-family-planning/initiatives-and-resources/male-services/>
7. Finer LB, Darroch JE, Frost JJ. Services for men at publicly funded family planning agencies, 1998–1999. *Perspect Sex Reprod Health* 2003;35:202–7.
8. Raine T, Marcell AV, Rocca CH, Harper CC. The other half of the equation: serving young men in a young women's reproductive health clinic. *Perspect Sex Reprod Health* 2003;35:208–14. <http://dx.doi.org/10.1363/3520803>
9. CDC. Sexually transmitted disease surveillance 2014. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <http://www.cdc.gov/std/stats14/surv-2014-print.pdf>

## Notes from the Field

### Typhoid Fever Outbreak Associated with an Asymptomatic Carrier at a Restaurant — Weld County, Colorado, 2015

Jessica Hancock-Allen, MSN<sup>1,2</sup>; Alicia B Cronquist, MPH<sup>2</sup>;  
JoRene Peden, MS<sup>3</sup>; Debra Adamson, MPH<sup>3</sup>; Nereida Corral, MPH<sup>2</sup>;  
Kerri Brown MSPH<sup>2</sup>

On September 11, 2015, a single case of typhoid fever, caused by *Salmonella* Typhi infection, was reported to the Colorado Department of Public Health and Environment (CDPHE). Because the patient (patient A) had symptom onset September 2 and had traveled internationally for 4 days 60 days before symptom onset, the case initially was thought to be travel-associated\* (1,2). On October 1, a second case of *S. Typhi* infection was reported in patient B, with symptom onset September 20. Patient B reported no international travel or contact with ill persons or known carriers. Patients A and B resided approximately 6 miles (10 kilometers) apart and had no discernible epidemiologic connection. Family members of patients A and B tested negative for *S. Typhi*. CDPHE and the Weld County Department of Public Health and Environment (WCDPHE) investigated to 1) determine whether these cases represented a larger outbreak, 2) identify common exposure sources, and 3) stop transmission. Investigators determined that the typhoid fever in both patients and in a third patient (patient C) was associated with eating in the same restaurant during a 5-day period.

CDPHE defined a case of typhoid fever as clinically compatible illness with isolation of *S. Typhi* during July 1–October 15 and identification of an isolate with one of two pulsed-field gel electrophoresis (PFGE) outbreak patterns that differed by one band. A carrier was defined as a person who had contact with patients, reported no recent illness, and had *S. Typhi* with either of the PFGE outbreak patterns in an isolate from a rectal swab or stool specimen. Case finding included searching PulseNet for other isolates that might have been associated with the Colorado cases (3). On October 13, CDPHE issued a health alert notification to clinicians, local public health authorities, and laboratories to be vigilant for additional cases and to encourage reporting. During October 1–9, CDPHE and WCDPHE used the *Salmonella* National Hypothesis Generating Questionnaire (4), credit card receipts, food recall, shopper card records, and social media to identify potential exposures shared by patients A and B during the 60 days preceding symptom onset. Investigators found that the

two patients had fresh produce purchases from the same grocery stores and had six common restaurant exposures.

On October 19, CDPHE was notified of a third Weld County resident who had tested positive for *S. Typhi* infection. Patient C had symptom onset September 15 and reported no recent travel or relation to patient A or B. Patient C was interviewed using the *Salmonella* questionnaire, and credit card receipts were reviewed. Patient C did not shop at the same grocery stores as patients A or B, but all three patients had eaten at restaurant A during August 16–20, 2015. Patients A and C were hospitalized. Isolates from patients B and C had indistinguishable PFGE patterns (pattern 2), and the isolate from patient A had a 1-band difference (pattern 1), which met the PFGE outbreak definition.

CDPHE hypothesized that a chronic *S. Typhi* carrier might be working in food service at restaurant A, where food is prepared using fresh ingredients. Possible transmission routes were investigated through environmental assessments and staff interviews; food service staff members were asked to be tested for *S. Typhi*. Environmental assessments performed on October 27 found no deficiencies in hand hygiene or other food handling issues. Administrators from restaurant A provided a list of all current and former employees who worked in food handling during August 10–August 20, 2015. These more conservative dates were chosen because food might have been served as many as 4 days after preparation, and because of concerns regarding the accuracy of credit card statement dates.

On October 28, current restaurant employees were confidentially interviewed at a local clinic by CDPHE and WCDPHE regarding international travel, symptoms, and work tasks. Because bacterial shedding can be intermittent, employees were requested to collect rectal swab specimens from themselves on October 28 and November 3 for culture and PFGE testing of isolates. All employees were allotted paid time to be interviewed and provide specimens. By October 29, a total of 28 (100%) current employees had responded and provided one or more rectal swab specimens. On October 30, CDPHE was notified by the state health laboratory that *S. Typhi* had been isolated from one employee. The isolate's PFGE pattern was indistinguishable from outbreak pattern 1, the pattern of patient A.

Interviews with the infected restaurant worker revealed travel to a country with endemic typhoid fever 15 years earlier, but no recent symptoms, and no contact with any ill persons. The worker was excluded from food service work, treated with azithromycin for 28 days, and monitored with stool testing until three consecutive specimens obtained  $\geq 1$  month apart

\* The incubation period for *S. Typhi* infection is 3–60 days; the usual range is 8–14 days.

were negative for *S. Typhi* (2). Restaurant A agreed to keep the worker's job open and allow him to return to work once he was no longer a carrier.

*S. Typhi* infection is a nationally notifiable condition; in Colorado, reporting is required within 24 hours of case detection. Notable clinical symptoms of typhoid fever include insidious onset of fever, and headache, constipation, chills, myalgia, and malaise (1). Unlike other *Salmonella* species, *S. Typhi* does not commonly cause diarrhea, and vomiting typically is not severe (1).

*S. Typhi* infection is endemic in many low-income countries; an estimated 22 million cases and 200,000 deaths occur each year (2). In the United States, approximately 5,700 cases of typhoid fever are reported annually; the majority occur among travelers (1). In Colorado during 2009–2014, on average, six cases of confirmed typhoid fever were reported annually; all cases were associated with international travel or attributed to a household member or close contact with a carrier. Humans are the only reservoir for *S. Typhi*; disease is transmitted via the fecal-oral route, typically by contaminated food or water. Chronic carriage occurs in 2%–5% of cases (1,2), and shedding of *S. Typhi* in chronic carrier stools can be intermittent.

This investigation highlights the potential for chronic *S. Typhi* carriers to cause illness in other persons, even years

after infection. When cases of typhoid fever not associated with travel are detected, rapid and thorough interviewing is essential. Social media posts and credit card receipts to detect common exposures can be useful. The high cooperation rate among workers at the restaurant, which is rare in foodborne outbreak investigations, was attributed to the restaurant's support and accommodation, demonstrating the importance of collaboration among local public health, state public health, public health laboratories, patients, and industry for successful investigations.

<sup>1</sup>Epidemic Intelligence Service, CDC; <sup>2</sup>Colorado Department of Public Health and Environment; <sup>3</sup>Weld County Department of Public Health and Environment, Colorado.

Corresponding author: Jessica Hancock-Allen, [ydi3@cdc.gov](mailto:ydi3@cdc.gov).

### References

1. CDC. Typhoid fever. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. <http://www.cdc.gov/typhoid-fever/index.html>
2. Heymann DL. Control of communicable disease manual. 19th ed. Washington, DC: American Public Health Association; 2008.
3. CDC. PulseNet. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <http://www.cdc.gov/pulsenet/>
4. Council to Improve Foodborne Outbreak Response. CDC national hypothesis generating questionnaire. Atlanta, GA: Council to Improve Foodborne Outbreak Response; 2015. <http://www.cifor.us/clearinghouse/tooldetail.cfm?id=288>

## Notes from the Field

### Strongyloidiasis at a Long-Term-Care Facility for the Developmentally Disabled — Arizona, 2015

Jefferson M. Jones, MD<sup>1,2</sup>; Clancey Hill, MPH<sup>3</sup>; Graham Briggs, MS<sup>3</sup>; Elizabeth Gray, MPH<sup>4</sup>; Sukwan Handali, MD<sup>4</sup>; Isabel McAuliffe<sup>4</sup>; Susan Montgomery, DVM<sup>4</sup>; Kenneth Komatsu, MPH<sup>2</sup>; Laura Adams, DVM<sup>2,5</sup>

*Strongyloides stercoralis* is an intestinal nematode endemic in the tropics and subtropics. Infection is usually acquired through skin contact with contaminated soil, or less commonly, from person to person through fecal contamination of the immediate environment. Infections are often asymptomatic, but can result in a pruritic rash, respiratory symptoms (e.g., cough or wheeze), and gastrointestinal symptoms (e.g., diarrhea and vomiting). Immunosuppressed persons can develop strongyloides hyperinfection syndrome, which can be fatal (1). In June 2015, the Pinal County Public Health Services District in Arizona was notified of a suspected strongyloidiasis infection in a resident of a long-term-care facility for developmentally disabled persons. The patient had anemia and chronic eosinophilia. The patient's serum tested positive for *S. stercoralis*-specific immunoglobulin G (IgG) by a commercial enzyme-linked immunosorbent assay (ELISA) and at CDC by a crude antigen ELISA, a quantitative assay for detection of IgG against *S. stercoralis*. An investigation was conducted to determine the infection source and identify additional cases.

During July–November 2015, serum from 160 of 292 (55%) employees and all 91 residents of the facility was tested for the presence of *Strongyloides* antibodies. Employees were screened by a NIE-1 antigen ELISA (2) and residents by a commercial ELISA (SeroELISA *Strongyloides* IgG, IVD Research, Carlsbad, California); serum specimens that tested positive by either of these tests were retested at CDC by crude antigen ELISA. Specimens from all employees tested negative; specimens from two (2%) additional residents tested positive. Among the three infected residents, all were aged 50–70 years and had lived in the facility for >50 years, two were female, and none had known travel history to an endemic area. According to staff member interviews and medical record reviews, none of the infected residents had chronic rash or diarrhea, two had recurrent pneumonia attributed to aspiration, and one reportedly had a chronic cough for >20 years. None was known to be immunosuppressed at any time. All three infected residents had documented peripheral eosinophilia (>450 eosinophils/ $\mu$ L; median maximum eosinophil count 1,100 eosinophils/ $\mu$ L

[range = 800–3,200 eosinophils/ $\mu$ L]) during the 10–13 years before diagnosis. Because medical records were available only for the preceding 13 years, it was not possible to ascertain when eosinophilia (and presumably, initial infection) began. Two infected residents shared the same house at the facility for >25 years; eight other residents resided in the house during this time. The third infected resident had no known close contact with these persons. Each of the three infected residents was treated with ivermectin 20 mg/kg daily (range = 1–3 doses). Eosinophil counts normalized in the two residents who were retested after treatment; none suffered complications. The chronic cough in one infected resident improved following ivermectin treatment.

Because of the residents' developmental disabilities, it was not possible to conduct detailed interviews with them regarding history of potential exposures and risks for infection. Interviews with facility management revealed activities associated with their developmental disabilities, including rectal digging, fecal smearing, and pica; these activities might have increased risk for disease transmission through contact with stool-contaminated surfaces containing infectious *Strongyloides* larvae. Ensuring proper hand hygiene among residents was a reported challenge, particularly after toilet use or when eating. Education and training regarding standard precautions among staff and residents were provided.

Although no source was identified, *Strongyloides* might have been introduced by an infected resident or employee from a region where it is endemic. Arid conditions in southern Arizona decrease the risk for *S. stercoralis* survival and transmission through contaminated soil (1). Although *Strongyloides* is uncommonly transmitted person to person, the reported high-risk behaviors of the residents likely increased the potential for disease transmission through indoor or outdoor environmental fecal contamination (3,4). Health care providers should consider *Strongyloides* infection among patients with chronic, unexplained eosinophilia (5). Developmentally disabled residents of long-term-care facilities might be at an increased risk for transmission of *Strongyloides* (3,4,6).

<sup>1</sup>Arizona Department of Health Services; <sup>2</sup>Epidemic Intelligence Service, Division of Scientific Education and Professional Development, CDC; <sup>3</sup>Pinal County Public Health Services District, Florence, Arizona; <sup>4</sup>Division of Parasitic Diseases and Malaria, Center for Global Health, CDC; <sup>5</sup>Field Services Branch, Division of State and Local Readiness, CDC.

Corresponding author: Jefferson M. Jones, jjones10@cdc.gov, 602-376-8251.

### References

1. Greaves D, Coggle S, Pollard C, Aliyu SH, Moore EM. *Strongyloides stercoralis* infection. *BMJ* 2013;347:f4610. <http://dx.doi.org/10.1136/bmj.f4610>
2. Rascoe LN, Price C, Shin SH, McAuliffe I, Priest JW, Handali S. Development of Ss-NIE-1 recombinant antigen based assays for immunodiagnosis of strongyloidiasis. *PLoS Negl Trop Dis* 9(4):e0003694. <http://dx.doi.org/doi:10.1371/journal.pntd.0003694>
3. CDC. Parasites. *Strongyloides*: strongyloidiasis infection FAQs. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. [http://www.cdc.gov/parasites/strongyloides/gen\\_info/faqs.html](http://www.cdc.gov/parasites/strongyloides/gen_info/faqs.html)
4. Brook I, Fish CH, Schantz PM, Cotton DD. Toxocariasis in an institution for the mentally retarded. *Infect Control* 1981;2:317–20.
5. CDC. Parasites. *Strongyloides*: resources for health professionals. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. [http://www.cdc.gov/parasites/strongyloides/health\\_professionals/](http://www.cdc.gov/parasites/strongyloides/health_professionals/)
6. CDC. Notes from the field: *Strongyloides* infection among patients at a long-term care facility—Florida, 2010–2012. *MMWR Morb Mortal Wkly Rep* 2013;62:844.

## Announcement

### World Sickle Cell Day — June 19, 2016

June 19 is World Sickle Cell Day. Sickle cell disease is a group of inherited red blood cell disorders that affect millions of persons worldwide. Sickle cell disease can cause pain and other serious problems, such as infection, acute chest syndrome, and stroke, and can lead to lifelong disabilities and reduced life expectancy.

Although the exact number of persons living with sickle cell disease in the United States is unknown, an estimated 100,000 persons in the United States are affected by sickle cell disease (1). CDC recently published a report estimating death rates from all causes among persons with sickle cell disease living in California and Georgia (<http://www.cdc.gov/ncbddd/sicklecell/features/keyfindings-scd-death-rate-estimates-ca-ga.html>) (2). This study found a higher death rate from all causes among persons aged 5–74 years with sickle cell disease than previously estimated using other methods. Death rates were higher among persons in California and Georgia aged 5–74 years with sickle cell disease than among African Americans in California and Georgia or among persons of similar age in the general population in these two states. This study provides the most accurate estimate to date of rates of death in persons with sickle cell disease.

CDC is also working with partners to develop the Sickle Cell Data Collection Program (<http://www.cdc.gov/ncbddd/hemoglobinopathies/scdc.html>), which tracks health information of persons living with sickle cell disease in the United States throughout their lives. The longitudinal data collection system will help inform decisions about best treatments and models of care for persons with sickle cell disease to improve and extend their lives.

In addition to conducting research and surveillance, CDC also strives to raise public awareness and provide education about sickle cell disease by providing free materials to families affected by the disease. Readers can learn more about sickle cell disease at <http://www.cdc.gov/ncbddd/sicklecell/index.html> and can print or download materials at <http://www.cdc.gov/ncbddd/sicklecell/freematerials.html>.

### References

1. Hassell KL. Population estimates of sickle cell disease in the U.S. *Am J Prev Med* 2010;38(Suppl):S512–21. <http://dx.doi.org/10.1016/j.amepre.2009.12.022>
2. Paulukonis ST, Eckman JR, Snyder AB, et al. Defining sickle cell disease mortality using a population-based surveillance system, 2004–2008. *Public Health Rep* 2016;131:367–75.

## Erratum

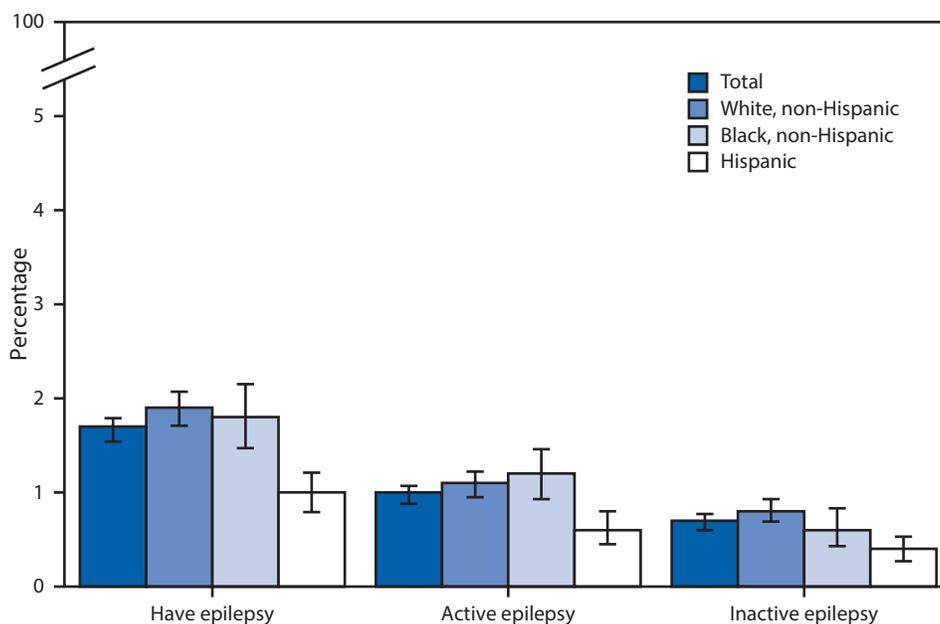
### Vol. 65, No. SS-6

In the Surveillance Summary, “Youth Risk Behavior Surveillance — United States, 2015,” an error occurred on page 27. In the second paragraph under “Condom Use,” the first sentence should read as follows: **“During 1991–2015, a significant linear increase occurred overall in the prevalence of having used a condom during last sexual intercourse (46.2%–56.9%).”**

## QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

### Age-Adjusted Percentages\* of Adults Aged $\geq 18$ Years Who Have Epilepsy, by Epilepsy Status<sup>†</sup> and Race/Ethnicity<sup>§</sup> — National Health Interview Survey, United States, 2010 and 2013 Combined<sup>¶</sup>



\* With 95% confidence intervals indicated with error bars.

<sup>†</sup> Respondents were asked, "Have you ever been told by a doctor or other health professional that you have a seizure disorder or epilepsy?" Persons responding "yes" were classified as having epilepsy. Those reporting having epilepsy who either were currently taking medication to control it, had one or more seizures in the past year, or both, were classified as having active epilepsy. Those with epilepsy who were neither taking medication for epilepsy nor had a seizure in the past year were classified as having inactive epilepsy.

<sup>§</sup> Non-Hispanic white and non-Hispanic black categories were limited to adults categorized as of a single race. Hispanics might be of any race.

<sup>¶</sup> Estimates are based on household interviews of a sample of the noninstitutionalized U.S. civilian population. Percentages were age-adjusted to the projected 2000 U.S. population as the standard population, by three age groups: 18–44, 45–64, and  $\geq 65$  years.

For the years 2010 and 2013 combined, 1.7% of adults aged  $\geq 18$  years (4.0 million) had epilepsy, 1.0% had active epilepsy, and 0.7% had inactive epilepsy. The prevalence of epilepsy and active epilepsy was significantly higher for non-Hispanic whites (1.9% and 1.1%, respectively) and non-Hispanic blacks (1.8% and 1.2%, respectively) compared with Hispanics (1.0% and 0.6%, respectively). The prevalence of inactive epilepsy was higher among non-Hispanic whites (0.8%) than Hispanics (0.4%). Non-Hispanic whites and non-Hispanic blacks did not differ significantly by epilepsy status.

Source: National Health Interview Survey. <http://www.cdc.gov/nchs/nhis.htm>.

Reported by: Mary Ann Bush, MS, [mbush@cdc.gov](mailto:mbush@cdc.gov), 301-458-4130; Sheila Franco.

## Morbidity and Mortality Weekly Report

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit *MMWR*'s free subscription page at <http://www.cdc.gov/mmwr/mmwrsubscribe.html>. Paper copy subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone 202-512-1800.

Readers who have difficulty accessing this PDF file may access the HTML file at <http://www.cdc.gov/mmwr/index2016.html>. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Executive Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30329-4027 or to [mmwrq@cdc.gov](mailto:mmwrq@cdc.gov).

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of these sites. URL addresses listed in *MMWR* were current as of the date of publication.

ISSN: 0149-2195 (Print)