



# MMWR™

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### World No Tobacco Day — May 31, 2007

World No Tobacco Day is sponsored annually by the World Health Organization to call attention to the global health burden resulting from tobacco use. This year's observance focuses on secondhand smoke and highlights the progress that has been achieved around the world in protecting nonsmokers by making workplaces and public spaces smoke-free.

In June 2006, the Surgeon General's report on *The Health Consequences of Involuntary Exposure to Tobacco Smoke* was released. This report concluded that secondhand smoke causes premature death and disease in children and nonsmoking adults. In addition, the report determined that no risk-free level of exposure to secondhand smoke exists and that only eliminating smoking in indoor spaces can fully protect nonsmokers. The report determined that other approaches, including separating smokers from nonsmokers and ventilating buildings, are not effective.

The 2006 report has contributed to the enactment of smoke-free laws in numerous states and local jurisdictions. In part because of the report's findings, state restaurant associations and state and local chambers of commerce are increasingly supporting such laws. The report also has contributed to adoption of voluntary smoke-free policies by employers and businesses, including major hotel chains. Finally, a growing number of national organizations and federal public health agencies have announced that they will hold conferences only in cities that are covered by state or local smoke-free laws. Additional information regarding secondhand smoke, including a consumer summary of the 2006 report and a video of its findings, is available at [http://www.cdc.gov/tobacco/data\\_statistics/sgr/sgr\\_2006/index.htm](http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2006/index.htm).

### Exposure to Secondhand Smoke Among Students Aged 13–15 Years — Worldwide, 2000–2007

Breathing secondhand smoke (SHS) causes heart disease and lung cancer in adults and increased risks for sudden infant death syndrome, acute respiratory infections, middle-ear disease, worsened asthma, respiratory symptoms, and slowed lung growth in children (1–3). No risk-free level of exposure to SHS exists (1). The Global Youth Tobacco Survey (GYTS), initiated in 1999 by the World Health Organization (WHO), CDC, and the Canadian Public Health Association, is a school-based survey that includes questions related to tobacco use, including exposure to SHS (4).<sup>\*</sup> This report examines data collected from 137 jurisdictions (i.e., countries and territories) during 2000–2007,<sup>†</sup> presents estimates of exposure to SHS at home and in places other than the home among students aged 13–15 years who had never smoked, and examines

<sup>\*</sup> Additional information available at <http://www.cdc.gov/tobacco/global/surveys.htm>.

<sup>†</sup> The number of jurisdictions varied by year. Some jurisdictions conducted repeat surveys; for those jurisdictions, the most recent data were used. Following are the number of jurisdictions from which data were collected, by year: 2000, six; 2001, nine; 2002, 21; 2003, 36; 2004, 25; 2005, 19; 2006, 15; and 2007, six.

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the association between exposure to SHS and susceptibility<sup>§</sup> to initiating smoking. GYTS data indicated that nearly half of never smokers were exposed to SHS at home (46.8%), and a similar percentage were exposed in places other than the home (47.8%). Never smokers exposed to SHS at home were 1.4 to 2.1 times more likely to be susceptible to initiating smoking than those not exposed. Students exposed to SHS in places other than the home were 1.3 to 1.8 times more likely to be susceptible to initiating smoking than those not exposed. As part of their comprehensive tobacco-control programs, countries should be encouraged to pass, implement, and enforce creation of smoke-free environments in all indoor public places and workplaces.

GYTS is a school-based survey that collects data from students by means of a standardized methodology for constructing the sample frame, selecting participating schools and classes, and processing data (4). Questionnaires were translated by coordinators into local languages and back-translated to check for accuracy. A two-stage, cluster-sample design was used to produce representative samples of students attending public and private schools in grades associated with ages 13–15 years in each country at national, regional, or local levels. A weighting factor was applied to each student record to adjust for nonresponse by school, class, and student and for variation in the probability of selection at the school and class levels. A final adjustment summed the weights by grade and sex to the population of school children in the selected grades in each country sample site. Statistical analysis of correlated data was conducted, and standard errors of the estimates were computed, producing 95% confidence intervals (CIs). Data included in this report come from GYTS surveys conducted in 137 jurisdictions during 2000–2007. Nationally representative data were collected in 105 jurisdictions, and subnational representative data were collected in 32 jurisdictions. In the 137 jurisdictions included in this study, approximately 750,000 students in approximately 10,000 schools completed the GYTS. Of the jurisdictions surveyed, 56.5% had 100% school participation rates, 41.3% had rates of 80%–99%, and 2.2% had school participation rates of <80%. Approximately 40% of the jurisdictions had student response rates of >90%, 50.7% had rates of 80%–90%, and 9.3% had student response rates of <80%.

<sup>§</sup>The Teenage Attitudes and Practices Survey conducted in 1989 and a follow-up survey conducted in 1993 determined that youths defined as susceptible to initiating smoking were two to three times more likely to initiate smoking than nonsusceptible youths. To be classified as nonsusceptible to smoking, a respondent had to answer “no” to the question, “Do you think that you will try a cigarette soon?” and “Definitely not” to the questions, “If one of your best friends were to offer you a cigarette, would you smoke it?” and “Do you think you will be smoking cigarettes 1 year from now?” (5).

Data were aggregated within each of the six WHO regions (African Region, Region of the Americas, Eastern Mediterranean Region, European Region, South-East Asia Region, and Western Pacific Region). Self-reported exposure to SHS at home and in places other than home was assessed in the six WHO regions. Regional aggregations were calculated as means weighted by the population of the sampling frame. In many cases, the sampling frame was the country, but in areas where samples were drawn to be representative of a subnational population, estimates were weighted by the population of the city, state, or administrative region and included in the regional aggregation.

Never smokers were defined as students who responded “no” to the question “Have you ever smoked a cigarette, even one or two puffs?” Exposure to SHS was determined by answers to two questions: “During the past 7 days, on how many days have people smoked in your home, in your presence?” and “During the past 7 days, on how many days have people smoked in your presence, in places other than in your home?” Students who answered 1 or more days were considered exposed to SHS. Susceptibility to initiating smoking was

determined by answers to two questions: “If one of your best friends offered you a cigarette would you smoke it?” and “At any time during the next 12 months do you think you will smoke a cigarette?” Students who answered “definitely not” to both questions were considered not susceptible to initiating smoking. Students who answered “definitely yes,” “probably yes,” or “probably no” to either question were considered susceptible to initiating smoking.

Overall, 80.3% of students aged 13–15 years said they had never smoked cigarettes, with the percentage ranging from 87.4% in the South-East Asia region to 54.9% in the Americas (Table). The percentage of students exposed to SHS at home was 46.8% and ranged from 71.5% in Europe to 22.6% in Africa. Among WHO regions, never smokers exposed to SHS at home were 1.4 to 2.1 times more likely to be susceptible to initiating smoking than those not exposed (Table). Overall, the percentage of students exposed to SHS in places other than home was 47.8% overall and ranged from 79.4% in Europe to 38.2% in Africa. By region, never smokers exposed to SHS in places other than home were 1.3 to 1.8

**TABLE. Exposure\* to secondhand smoke (SHS) at home and in places other than home and susceptibility to initiating smoking† among students aged 13–15 years who had never smoked cigarettes,§ by World Health Organization (WHO) region — Global Youth Tobacco Survey, 2000–2007**

WHO region	Students who had never smoked % (95% CI <sup>¶</sup> )	Never smokers exposed to SHS at home % (95% CI)	Students susceptible to initiating smoking		Ratio of % susceptible exposed to SHS at home to % not exposed	Never smokers exposed to SHS in places other than home % (95% CI)	Students susceptible to initiating smoking		Ratio of % susceptible exposed to SHS in places other than home to % not exposed
			Never smokers exposed to SHS at home % (95% CI)	Never smokers not exposed to SHS at home % (95% CI)			Never smokers exposed to SHS in places other than home % (95% CI)	Never smokers not exposed to SHS in places other than home % (95% CI)	
Africa (n = 103,906)	79.3 (75.5–82.7)	22.6 (19.5–26.1)	17.4 (12.1–24.8)	11.6 (8.9–15.2)	1.5	38.2 (34.2–42.4)	14.9 (10.5–21.1)	11.7 (8.7–15.8)	1.3
Americas (n = 236,687)	54.9 (50.8–59.0)	39.1 (31.6–47.2)	30.2 (23.1–38.4)	21.0 (16.8–26.1)	1.4	41.7 (36.9–46.6)	30.0 (24.2–36.7)	18.7 (14.1–24.6)	1.6
Eastern Mediterranean (n = 92,075)	84.4 (80.2–87.8)	37.0 (33.7–40.4)	20.2 (16.7–24.4)	14.4 (11.8–17.7)	1.4	42.9 (39.0–47.0)	20.5 (16.9–24.8)	13.6 (11.1–16.6)	1.5
Europe (n = 154,759)	68.0 (65.0–70.8)	71.5 (64.6–76.0)	21.6 (17.9–25.9)	15.9 (11.3–22.5)	1.4	79.4 (73.9–83.7)	21.7 (18.2–25.6)	15.7 (10.8–22.3)	1.4
South-East Asia (n = 91,459)	87.4 (83.8–90.2)	42.8 (35.2–49.7)	24.2 (20.0–29.2)	11.3 (9.5–13.7)	2.1	38.8 (35.9–41.7)	18.9 (15.9–22.4)	11.6 (9.4–15.0)	1.6
Western Pacific (n = 68,717)	69.8 (66.1–73.2)	57.3 (48.5–65.3)	15.9 (12.5–20.2)	10.7 (8.5–13.5)	1.5	52.6 (49.2–56.1)	16.5 (13.3–20.3)	9.3 (7.1–12.2)	1.8
<b>Total (N = 747,603)</b>	<b>80.3 (76.7–83.4)</b>	<b>46.8 (39.9–52.5)</b>	<b>22.3 (18.2–27.4)</b>	<b>12.5 (10.1–15.7)</b>	<b>1.8</b>	<b>47.8 (44.1–51.3)</b>	<b>19.3 (15.9–23.3)</b>	<b>12.4 (9.7–16.2)</b>	<b>1.6</b>

\* Determined by answers to two questions: “During the past 7 days, on how many days have people smoked in your home, in your presence?” and “During the past 7 days, on how many days have people smoked in your presence, in places other than in your home?” Students who answered 1 or more days were considered exposed to SHS.

† Determined by answers to two questions: “If one of your best friends offered you a cigarette would you smoke it?” and “At any time during the next 12 months do you think you will smoke a cigarette?” Students who answered “definitely not” to both questions were considered not susceptible to initiating smoking. Students who answered “definitely yes,” “probably yes,” or “probably no” to either question were considered susceptible to initiating smoking.

§ Defined as a response of “no” to the question, “Have you ever smoked a cigarette, even one or two puffs?”

¶ Confidence interval.

times more likely to be susceptible to initiating smoking than those not exposed.

**Reported by:** *DW Bettcher, MD, PhD, A Peruga, MD, DrPH, Tobacco Free Initiative, Geneva, Switzerland; B Fishburn, MPP, Western Pacific Regional Office; J Baptiste, PhD, African Regional Office; F El-Awa, PhD, Eastern Mediterranean Regional Office; H Nikogosian, MD, European Regional Office; K Rahman, PhD, South-East Asia Regional Office; V Costa de Silva, MD, PhD, Region of the Americas, World Health Organization, Geneva, Switzerland. J Chauvin, Canadian Public Health Association, Ottawa, Canada. CW Warren, PhD, NR Jones, PhD, J Lee, MPH, V Lea, MPH, M Lewis, MPH, S Babb, MPH, S Asma, DDS, MT McKenna, MD, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Before development and implementation of GYTS, few global data existed on the use of tobacco products or factors associated with tobacco use among adolescents (4). This study determined that students who were never smokers and exposed to SHS at home and in places other than the home were more susceptible to initiating smoking than those not exposed. This finding was consistent across all six WHO regions, although with small variations in the size of the ratio between those exposed to SHS and those not exposed. Also, data on susceptibility was consistent across time both within country (i.e., in repeat surveys) and within region. In a longitudinal study of factors predicting smoking behavior, having parents and best friends who smoked increased the likelihood that a never smoker would initiate smoking (5). Thus, exposure to SHS is an important factor associated with susceptibility to initiating smoking among never smokers.

The findings in this report are subject to at least three limitations. First, because GYTS is limited to students, the survey might not be representative of all youths aged 13–15 years from participating countries. However, in most countries, the majority of persons in this age group do attend regular, private, or technical schools (6). Second, these data apply only to youths who were in school on the day of the survey and who completed the survey. However, student response rates were high (more than 90% of the sites had student response rates of 80% or higher), suggesting that bias attributable to absence or nonresponse was limited. Finally, data were based on the self-report of students, who might underreport or overreport their behaviors or attitudes. The extent of this bias cannot be determined from these data; however, reliability studies in the United States have shown good test-retest results for similar tobacco-related questions (7).

Scientific evidence has determined that no safe level of exposure exists to SHS, a pollutant that causes serious illnesses in adults and children (1–3). Therefore, implementing 100% smoke-free environments is the only effective way to protect

the population from exposure to SHS. Article 8 of WHO's Framework Convention on Tobacco Control (WHO FCTC), ratified by more than 145 countries, calls for jurisdictions to provide "protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places" (8). WHO recommends 100% smoke-free environments as the only proven way to adequately protect the health of the public and workers (9).

In 2004, Ireland became the first nation to create smoke-free indoor workplaces and public areas with a comprehensive ban that included restaurants, bars, and pubs. Since then, other countries have enacted similar bans: Mauritius, New Zealand, Niger, Norway, Italy, Scotland, Northern Ireland, Wales, Uganda, and Uruguay (9). In Canada, 80% of the population lives in jurisdictions with comprehensive smoke-free legislation (9). In addition, the majority of persons in the United States live under a state or local law that makes workplaces, restaurants, or bars completely smoke-free; 23.8% of the population is covered by state or local laws that make all three settings smoke-free, and 38.8% of the population is covered by state or local laws that make workplaces smoke-free (10).

The goal of WHO's 2007 World No Tobacco Day is to promote smoke-free environments. Such policies will contribute to reducing mortality among nonsmokers who die from diseases caused by breathing SHS and reducing tobacco use among persons who continue to smoke (9).

## References

1. US Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2006. Available at [http://www.cdc.gov/tobacco/data\\_statistics/sgr/sgr\\_2006/index.htm](http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2006/index.htm).
2. California Environmental Protection Agency. Proposed identification of environmental tobacco smoke as a toxic air contaminant. Sacramento, CA: Office of Environmental Health Hazard Assessment; 2005.
3. World Health Organization International Agency for Research on Cancer. Monographs on the evaluation of carcinogenic risks to humans. Volume 83: tobacco smoke and involuntary smoking. Lyon, France: IARC Press; 2004.
4. Warren CW, Jones NR, Eriksen MP, Asma S, Global Tobacco Surveillance System Collaborative Group. Patterns of global tobacco use in young people and implications for future chronic disease burden in adults. *Lancet* 2006;367:749–53.
5. Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Merritt RK. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychol* 1996;15:355–61.
6. United Nations Children's Fund. The state of the world's children, 2002. New York, NY: United Nations Children's Fund; 2002. Available at <http://www.unicef.org/sowc02/fullreport.htm>.
7. Brener ND, Kann L, McManus T, Kinchen SA, Sundberg EC, Ross JG. Reliability of the 1999 Youth Risk Behavior Survey questionnaire. *J Adolesc Health* 2002;31:336–42.
8. World Health Organization. WHO Framework Convention on Tobacco Control. Geneva, Switzerland: World Health Organization; 2003. Available at <http://www.who.int/tobacco/framework>.

9. World Health Organization. Smoke-free inside: create and enjoy 100% smoke-free environments. Geneva, Switzerland: World Health Organization; 2007. Available at <http://www.who.int/tobacco/resources/publications/wntd/2007/en/index.html>.
10. American Nonsmokers' Rights Foundation. Summary of 100% smokefree state laws and population protected by 100% U.S. smokefree laws. Berkeley, CA: American Nonsmokers' Rights Foundation; 2007. Available at <http://www.no-smoke.org/pdf/SummaryUSPopList.pdf>.

## State-Specific Prevalence of Smoke-Free Home Rules — United States, 1992–2003

Secondhand smoke (SHS) causes premature death and disease in children and in adults who do not smoke (1). The home is the primary source of exposure to SHS for infants and children and an important source of SHS exposure for nonsmoking adults (1). To assess trends in national and state-specific prevalence of home “no smoking” rules (i.e., smoke-free home rules), CDC analyzed data from the Tobacco Use Supplements to the Current Population Survey (TUS-CPS) for 1992–1993, 1998–1999, and 2003. This report summarizes the results of that analysis, which indicated that the national prevalence of households with smoke-free home rules in the United States has increased by 67%, from 43.2% during 1992–1993 to 72.2% in 2003. During this period, the national prevalence of such rules increased by 231%, from 9.6% to 31.8%, among households with at least one smoker, and by 47%, from 56.8% to 83.5%, among households without smokers. Increases in the prevalence of smoke-free home rules were observed nationally and in all states, although variation continues to be observed among states. Comprehensive tobacco-control measures, including evidence-based interventions to help smokers quit, policies making workplaces and public places smoke-free, and initiatives to educate the public on the health effects of SHS, are needed to further reduce exposure of nonsmokers to SHS.

The Current Population Survey is a continuous monthly household survey administered by the U.S. Census Bureau for the Bureau of Labor Statistics that examines labor force indicators for the U.S. civilian, noninstitutionalized population aged  $\geq 15$  years (2). Beginning in 1992–1993, the National Cancer Institute has sponsored a Tobacco Use Supplement to this survey with questions on tobacco use and related topics. The TUS-CPS was conducted in selected months during 1992–1993, 1995–1996, 1998–1999, 2001–2002, and 2003. The 2003 data are the most recent data available for analysis. Data from 1992–1993, 1998–1999, and 2003 were used for this report. This nationally representative sample contains information on approximately 240,000 persons within

a given survey period. The response rates for TUS-CPS ranged from 65% in 2003 to 72% in 1992–1993 (2).<sup>\*</sup> Data were adjusted for nonresponse and were weighted to provide national and state-specific estimates of the prevalence of smoke-free home rules, and confidence intervals were calculated.

Each household member aged  $\geq 15$  years was asked, “Which statement best describes the rules about smoking inside your home?” The response options were 1) “No one is allowed to smoke anywhere inside your home,” 2) “Smoking is allowed in some places or at some times inside your home,” or 3) “Smoking is permitted anywhere inside your home.” Excluded from the analysis were households responding “don’t know,” “refused,” or “no response” and those with discrepancies in household members’ responses (e.g., when one respondent reported a smoke-free home rule and another respondent from the same household reported that smoking is allowed inside the home). From 1992–1993 to 2003, increases occurred nationally and in every state in the percentage of households with complete smoke-free home rules (i.e., no one is allowed to smoke anywhere inside the home) (Table). During 1992–1993, the percentage of households with smoke-free home rules ranged from 25.7% in Kentucky to 69.6% in Utah. In 2003, the percentage ranged from 53.4% in Kentucky to 88.8% in Utah. The state with the smallest increase during this period was Utah (27.6%), which had the highest prevalence of smoke-free home rules during 1992–1993. Kentucky, the state with the lowest prevalence of smoke-free home rules during 1992–1993, had the largest increase during this period (107.9%).

**Reported by:** *A Trosclair, S Babb, R Murphy, K Asman, C Husten, A Malarcher, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Revised Healthy People 2010 objectives call for reducing the proportion of children aged  $< 6$  years who are regularly exposed ( $\geq 4$  days per week) to SHS in the home to 6% (objective 27-9) and reducing the proportion of nonsmokers aged  $\geq 4$  years who are exposed to SHS to 63% (objective 27-10) (3). The second objective has already been met: approximately 36% of U.S. nonsmokers were exposed to SHS during 2003–2004 (CDC, unpublished data from the National Health and Nutrition Examination Survey [NHANES], 2003–2004). The progress that has been made toward realizing these objectives reflects recent decreases in SHS exposure in homes, workplaces, public places, and other settings.

<sup>\*</sup> Additional information available at <http://riskfactor.cancer.gov/studies/tus-cps/info.html>.

**TABLE. Percentage of households reporting smoke-free home rules, by state/area — Current Population Survey, United States, 1992–1993, 1998–1999, and 2003\***

State/Area	1992–1993 (n = 132,899)		1998–1999 (n = 117,895)		2003 (n = 127,332)		% change from 1992–1993 to 2003
	%	(95% CI†)	%	(95% CI)	%	(95% CI)	
Alabama	38.9	(34.2–43.7)	59.1	(55.5–62.8)	70.9	(67.7–74.1)	82.1
Alaska	50.9	(46.6–55.3)	60.9	(57.0–64.8)	75.8	(73.0–78.6)	48.8
Arizona	54.4	(50.9–57.9)	71.6	(68.8–74.4)	82.4	(80.1–84.7)	51.5
Arkansas	33.2	(30.1–36.3)	53.0	(50.2–55.8)	60.1	(55.6–64.6)	81.0
California	59.1	(57.4–60.8)	72.7	(71.5–73.9)	84.4	(83.4–85.4)	42.9
Colorado	48.3	(45.3–51.2)	65.2	(61.7–68.7)	79.3	(77.3–81.3)	64.3
Connecticut	44.7	(42.0–47.4)	60.1	(54.8–65.3)	73.4	(71.1–75.7)	64.2
Delaware	40.1	(37.0–43.3)	55.4	(51.6–59.2)	69.7	(66.8–72.6)	73.7
District of Columbia	41.4	(37.4–45.3)	56.6	(53.1–60.2)	68.1	(65.3–70.9)	64.7
Florida	50.2	(48.3–52.1)	66.0	(64.1–67.8)	78.5	(77.1–79.9)	56.4
Georgia	41.8	(38.7–44.8)	61.9	(59.3–64.5)	77.4	(73.9–80.9)	85.4
Hawaii	51.5	(47.1–55.8)	65.0	(61.1–68.9)	79.7	(76.6–82.8)	54.9
Idaho	50.6	(45.6–55.6)	70.3	(66.6–74.1)	78.8	(76.5–81.1)	55.9
Illinois	38.6	(35.4–41.7)	54.6	(52.9–56.2)	64.8	(63.0–66.6)	68.0
Indiana	33.9	(30.7–37.1)	47.9	(44.8–50.9)	62.7	(58.7–66.7)	85.2
Iowa	36.1	(33.2–39.0)	52.9	(48.4–57.4)	68.0	(64.4–71.6)	88.6
Kansas	39.9	(36.0–43.7)	59.3	(55.8–62.9)	66.9	(63.8–70.0)	67.8
Kentucky	25.7	(21.5–29.9)	38.9	(35.0–42.8)	53.4	(48.5–58.3)	107.9
Louisiana	37.3	(33.8–40.8)	58.2	(53.0–63.5)	68.6	(65.1–72.1)	83.9
Maine	39.4	(34.6–44.2)	54.4	(51.3–57.5)	69.0	(66.9–71.1)	75.1
Maryland	43.0	(39.7–46.3)	64.3	(61.7–67.0)	75.9	(73.1–78.7)	76.6
Massachusetts	40.3	(38.1–42.4)	60.1	(57.7–62.4)	75.5	(73.4–77.6)	87.6
Michigan	35.4	(33.5–37.2)	51.2	(48.7–53.6)	60.7	(58.7–62.7)	71.7
Minnesota	39.7	(37.8–41.6)	61.5	(58.7–64.3)	71.5	(69.0–74.0)	80.1
Mississippi	41.2	(37.3–45.0)	54.9	(51.2–58.7)	69.6	(66.1–73.1)	69.1
Missouri	34.5	(30.4–38.6)	53.7	(50.3–57.2)	64.0	(60.8–67.2)	85.7
Montana	43.1	(39.2–47.0)	61.0	(57.3–64.7)	70.0	(66.7–73.3)	62.5
Nebraska	39.9	(36.2–43.6)	59.5	(57.3–61.8)	69.2	(65.9–72.5)	73.3
Nevada	45.5	(42.4–48.7)	63.7	(61.0–66.3)	79.6	(77.2–82.0)	74.9
New Hampshire	38.4	(34.7–42.1)	56.5	(52.2–60.9)	74.6	(72.0–77.2)	94.4
New Jersey	45.5	(43.1–47.9)	61.3	(59.4–63.2)	74.0	(72.0–76.0)	62.5
New Mexico	45.6	(41.0–50.1)	62.7	(59.9–65.5)	75.5	(73.3–77.7)	65.8
New York	41.6	(39.8–43.4)	58.3	(56.7–59.8)	70.5	(68.9–72.1)	69.5
North Carolina	34.3	(32.6–36.1)	53.0	(51.0–54.9)	65.4	(63.0–67.8)	90.8
North Dakota	41.2	(37.0–45.3)	56.4	(51.8–61.0)	68.2	(64.5–71.9)	65.7
Ohio	35.1	(33.6–36.6)	51.4	(49.5–53.3)	60.8	(58.4–63.2)	73.2
Oklahoma	39.2	(34.9–43.5)	54.1	(50.8–57.3)	64.7	(61.3–68.1)	64.9
Oregon	50.0	(45.9–54.1)	68.0	(64.5–71.6)	81.2	(78.3–84.1)	62.4
Pennsylvania	39.9	(38.2–41.7)	56.3	(54.7–57.9)	67.5	(65.5–69.5)	69.0
Rhode Island	38.9	(33.8–43.9)	60.4	(57.8–63.0)	69.8	(67.2–72.4)	79.6
South Carolina	40.2	(37.5–42.9)	58.6	(56.1–61.2)	67.5	(64.2–70.8)	67.9
South Dakota	36.8	(34.3–39.3)	57.1	(52.5–61.8)	71.1	(68.1–74.1)	93.2
Tennessee	34.1	(30.6–37.6)	52.0	(48.9–55.1)	64.2	(60.0–68.4)	88.3
Texas	46.3	(43.4–49.2)	65.3	(63.6–67.0)	78.5	(76.9–80.1)	69.5
Utah	69.6	(65.8–73.4)	81.1	(77.2–85.1)	88.8	(86.1–91.5)	27.6
Vermont	39.1	(35.2–42.9)	59.7	(56.4–62.9)	69.3	(66.8–71.8)	77.5
Virginia	39.3	(36.1–42.4)	58.4	(54.6–62.1)	72.7	(70.1–75.3)	85.1
Washington	54.3	(50.5–58.0)	68.9	(66.1–71.8)	79.3	(76.4–82.2)	46.2
West Virginia	27.8	(23.7–31.9)	42.8	(39.1–46.5)	57.1	(53.4–60.8)	105.5
Wisconsin	36.7	(33.5–39.8)	55.4	(51.9–58.9)	66.4	(63.6–69.2)	81.1
Wyoming	38.6	(34.5–42.7)	58.0	(54.8–61.1)	65.5	(61.9–69.1)	69.8
Minimum	25.7	—	38.9	—	53.4	—	27.6
Maximum	69.6	—	81.1	—	88.8	—	107.9
Range	43.9	—	42.3	—	35.4	—	80.2
Median	39.9	—	58.6	—	69.8	—	71.7
<b>Total</b>	<b>43.2</b>	<b>(42.3–44.1)</b>	<b>60.2</b>	<b>(59.8–60.6)</b>	<b>72.2</b>	<b>(71.8–72.6)</b>	<b>67.1</b>

\* Based on the Tobacco Use Supplements to the Current Population Survey (1992–1993, 1998–1999, and 2003). Additional information available at <http://www.census.gov/prod/2002pubs/tp63rv.pdf>. Responses from all household members aged ≥15 years were examined to estimate the percentage of homes with smoke-free rules (i.e., all respondents in the household reported that no one is allowed to smoke anywhere inside the home). Excluded from the analysis were households responding “don’t know,” “refused,” or “no response” and those with discrepancies in household members’ responses (e.g., when one respondent reported a smoke-free home rule and another respondent from the same household reported that smoking is allowed inside the home).

† Confidence interval.

The recently published Surgeon General's report *The Health Consequences of Involuntary Exposure to Tobacco Smoke* notes that SHS exposure declined during the past decade as a result of stronger smoke-free policies in workplaces and public places (1). However, many millions of children and nonsmoking adults continue to be exposed to SHS. Because persons spend so much time in the home, it remains the primary setting where SHS exposure occurs for children and for nonsmoking adults who are exposed at home but not at work. Children who live in homes where smoking is allowed have higher levels of blood cotinine (a metabolite of nicotine used as a biologic marker for SHS exposure in nonsmokers) than children who live in homes where smoking is not allowed (1). In addition, substantial sociodemographic disparities exist with regard to SHS exposure in the home. For example, evidence suggests that blacks and persons with low incomes are more likely to be exposed to SHS in the home than other groups (1).

The Surgeon General's report states that complete elimination of smoking in indoor spaces is the only measure that fully protects nonsmokers from SHS exposure; other approaches, such as separation of smokers from nonsmokers and ventilation, are not effective (1). The misconception that measures that fall short of making homes completely smoke-free can effectively protect children and adult nonsmokers is a major barrier to the adoption of smoke-free home rules (1). Making homes completely smoke-free substantially reduces total SHS exposure among nonsmoking residents; the evidence also suggests that smoke-free home rules help smokers quit and reduce smoking initiation among youth (1,4).

The increase in smoke-free homes described in this report appears to have been driven by two factors: 1) an underlying decrease in smoking rates among adults and youth (1), and 2) adoption of smoke-free home rules because of changes in knowledge and attitudes (1). Because smoke-free home rules are created voluntarily in the home, they are important indicators of changes in public awareness of the health effects of SHS and in public attitudes regarding the social acceptability of smoking. They also reflect personal concerns about protecting family members (1). In particular, the large increase in smoke-free home rules that has occurred in households with smokers during the past 10 years suggests a considerable shift in social norms.

Both cross-sectional and prospective studies examining the association between laws and policies restricting smoking in workplaces and public places and private home smoking restrictions indicate that the experience of living under laws that make workplaces and public places smoke-free increases the voluntary adoption of smoke-free home rules (5). Other factors, including the absence of smokers and the presence of

children and nonsmoking adults in a household, are also associated with increased adoption of smoke-free home rules (1,5). As part of a comprehensive approach to tobacco control, the public health community plays an important role in promoting smoke-free homes by educating smokers about the dangers SHS exposure poses to their family's health (1). The U.S. Environmental Protection Agency carries out a national educational program that encourages parents to make their homes smoke-free to protect their children's health (6). Educational campaigns can also raise public awareness about the serious health risks that SHS exposure in the home poses to nonsmoking adults. Further research, including evaluation of ongoing initiatives, is needed to examine which educational approaches are most effective in promoting smoke-free homes.

The findings in this report are subject to at least four limitations. First, [Address TUS-CPS response rate and validity]. Second, estimates for homes with smoke-free rules are based on self-report and are not validated by an objective measure (7). However, data from NHANES III indicated agreement between self-reports of SHS exposure in the home and blood cotinine levels, suggesting that self-reports of home smoking rules are also valid (8). In addition, no evidence suggests that misclassification of self-reported home smoking restrictions has changed over time, so the data reported in this study would be expected to accurately reflect national and state trends. Third, because responses from members of certain households were discrepant regarding the level of smoking restrictions, these households were excluded from the analysis. However, the percentage of households with such discrepancies was small and declined over time, from 6.6% of households during 1992–1993 to 2.3% in 2003. Finally, certain households that responded to the question about home smoking rules had only one occupant (41.5% in 2003). In such situations, no other household member could be a source of SHS or exposed to SHS. However, a smoke-free home rule would still protect the household occupant from SHS exposure from visitors and would protect visitors from SHS. Similarly, in situations when no member of a multi-occupant household is a smoker, smoke-free home rules would still protect nonsmoking household occupants from SHS exposure from visitors.

The single best step that persons who smoke can take to protect both the health of nonsmoking family members and their own health is to quit smoking. Effective smoking-cessation interventions are available, including brief clinical counseling, medications approved by the Food and Drug Administration, and state telephone quitlines (available by dialing 1-800-QUIT NOW) (9). In addition to advising patients to quit smoking, health-care providers can help patients quit by discussing the health effects of SHS exposure and by recommending that they adopt smoke-free home rules (1).

Comprehensive tobacco-control programs that implement effective interventions to decrease smoking initiation, increase smoking cessation, and eliminate nonsmokers' exposure to SHS need to be fully implemented to accelerate progress in reducing the health burden from tobacco use and SHS (10). Although SHS exposure has decreased substantially among U.S. nonsmokers during the past 10 years, the findings of this report indicate that millions of children and nonsmoking adults remain at risk for SHS exposure because their homes do not have bans against smoking. Continued increases in the number of smoke-free workplaces, smoke-free public places, and smoke-free homes are needed to protect nonsmokers from this widespread and preventable health hazard (1).

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### References

1. US Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2006. Available at [http://www.cdc.gov/tobacco/data\\_statistics/sgr/sgr\\_2006/index.htm](http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2006/index.htm).
2. US Department of Labor, Bureau of Labor Statistics. The current population survey: design and methodology. Technical paper 63RV. Washington, DC: US Department of Labor; 2002. Available at <http://www.census.gov/prod/2002pubs/tp63rv.pdf>.
3. US Department of Health and Human Services. Healthy people 2010: midcourse review. Washington, DC: US Department of Health and Human Services; 2006. Available at <http://www.healthypeople.gov/data/midcourse/html/default.htm>.
4. Farkas AJ, Gilpin EA, White MM, Pierce JP. Association between household and workplace smoking restrictions and adolescent smoking. *JAMA* 2000;284:717–22.
5. Borland R, Yong H-H, Cummings KM, Hyland A, Anderson S, Fong GT. Determinants and consequences of smoke-free homes: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2006;15(suppl 3):iii42–iii50.
6. US Environmental Protection Agency. Smoke-free homes program. Available at <http://www.epa.gov/smokefree>.
7. Mumford EA, Levy DT, Romano EO. Home smoking restrictions: problems in classification. *Am J Prev Med* 2004;27:126–31.
8. Pirkle JL, Flegal KM, Bernert JT, et al. Exposure of the US population to environmental tobacco smoke: the third National Health and Nutrition Examination Survey, 1988 to 1991. *JAMA* 1996;275:1233–40.
9. The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives. A clinical practice guideline for treating tobacco use and dependence: a US Public Health Service report. *JAMA* 2000;283:3244–54.
10. CDC. Best practices for comprehensive tobacco control programs—August 1999. Atlanta, GA: US Department of Health and Human Services, CDC; 1999.

## Outpatient Rehabilitation Among Stroke Survivors — 21 States and the District of Columbia, 2005

Stroke is a leading cause of severe and long-term disability in the United States (1). Approximately 700,000 Americans have a new or recurrent stroke each year (1); among those who survive, only 10% recover completely, and many of the remaining survivors need rehabilitation because of resulting impairments (2). Long-term disability not only affects functional status and social roles among stroke survivors but also results in substantial costs; the combined direct and indirect costs of stroke are projected to be \$62.7 billion in the United States in 2007 (1). Although studies have established that timely and intensive rehabilitation can substantially improve patients' functional outcomes and quality of life after an acute stroke (2–4), few studies (5) have provided population-based estimates of the prevalence of acute stroke rehabilitation. To examine the prevalence of outpatient stroke rehabilitation among selected populations, CDC assessed data from the 2005 Behavioral Risk Factor Surveillance System (BRFSS) on stroke survivors in 21 states\* and the District of Columbia (DC). This report summarizes the results of that assessment, which indicated that 30.7% of the stroke survivors received outpatient rehabilitation, and a higher prevalence of outpatient stroke rehabilitation among men, non-Hispanic blacks, unemployed or retired adults, and persons living in the center city of a metropolitan statistical area (MSA) than in comparison groups. The findings also indicate that the prevalence of stroke survivors who are receiving outpatient stroke rehabilitation services is lower than would be expected if the clinical practice guideline recommendations for all stroke patients were being followed (4,6). Increasing the number of stroke survivors who receive needed outpatient rehabilitation might lead to better functional status and quality of life in this population.

Data were analyzed from the 2005 BRFSS survey, a state-based, random-digit-dialed telephone survey of the noninstitutionalized, U.S. civilian population aged  $\geq 18$  years. All participants were asked, "Has a doctor, nurse, or other health professional ever told you that you had a stroke?" If the answer was "yes," the participants were asked an additional question from the optional cardiovascular health module: "After you left the hospital following your stroke, did you go to any kind of outpatient rehabilitation? This is sometimes called 'rehab.'" (Stroke or rehabilitation could have occurred

\*Alabama, Arkansas, Connecticut, Georgia, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Montana, Nebraska, New Jersey, New York, North Dakota, Ohio, Oklahoma, South Carolina, Utah, Virginia, and West and Virginia.

at any time in the past; no date restrictions were included.) Sociodemographic data collected in the survey included age, sex, race/ethnicity, marital status, education, employment status, income level, insurance coverage, and assigned MSA status. Twenty-one states and DC implemented the optional module; the median response rate, based on Council of American Survey and Research Organizations (CASRO) guidelines, was 51.3% (range: 34.6% to 66.7%). CASRO response rates account for both the efficiency of the telephone sampling method and the actual participation rates among eligible respondents [Define “eligible.”]. The median cooperation rate, defined as the proportion of all respondents interviewed among all eligible persons who were contacted, was 74.3% (range: 63.2%–85.3%).

Prevalence estimates and 95% confidence interval (CIs) for a history of stroke and receipt of outpatient stroke rehabilitation among stroke survivors were calculated from aggregated data from all 21 states and DC. Prevalence estimates of outpatient stroke rehabilitation also were obtained for populations defined by age, sex, race/ethnicity, marital status, education level, employment status, income level, insurance coverage, and MSA status. Logistic regression was used to estimate the odds of receiving outpatient stroke rehabilitation in subpopulations compared with a referent group, after adjustment for age. Data were weighted to reflect each state’s population.

Among 129,761 survey respondents in the 21 states and DC, 4,689 (2.6%, CI = 2.5–2.8) reported that they had ever had a stroke. Of these, 4,420 responded to the question on stroke rehabilitation; 1,297 (30.7%, CI = 28.5–33.1) had received outpatient stroke rehabilitation after leaving the hospital. Stroke survivors in the three age groups had a similar prevalence of outpatient stroke rehabilitation (Table). The age-adjusted prevalence of receipt of outpatient stroke rehabilitation was higher among men than women (adjusted odds ratio [AOR] = 1.31, CI = 1.05–1.63), and non-Hispanic blacks had a higher prevalence of outpatient stroke rehabilitation than non-Hispanic whites (AOR = 1.49, CI = 1.10–2.00). Compared with stroke survivors who were employed at the time of the survey, receipt of stroke rehabilitation was higher among respondents who were unemployed (AOR = 1.59, CI = 1.16–2.18) or retired (AOR = 1.45, CI = 1.01–2.09). Adults living in a non-MSA had a lower prevalence of outpatient stroke rehabilitation than those living in the center city of an MSA (AOR = 0.72; 95% CI = 0.55–0.93). The prevalence of receipt of outpatient stroke rehabilitation did not differ significantly by marital status, education level, income level, or insurance status.

**TABLE. Number and percentage of stroke survivors who reported receiving outpatient stroke rehabilitation, by selected characteristics — Behavioral Risk Factor Surveillance System (BRFSS), 21 states\* and the District of Columbia, 2005**

Characteristic	Total sample size	Reported receiving outpatient stroke rehabilitation		
		No.	(%) <sup>†</sup>	(95% CI) <sup>§</sup>
<b>Total</b>	<b>4,420</b>	<b>1,297</b>	<b>(30.7)</b>	<b>(28.5–33.1)</b>
<b>Age (yrs)</b>				
18–64 <sup>¶</sup>	1,859	552	(30.3)	(26.9–34.0)
65–79	1,795	509	(30.4)	(26.8–34.2)
≥80	766	236	(33.0)	(27.9–38.7)
<b>Sex</b>				
Men	1,605	538	(33.8)	(29.9–37.7)**
Women <sup>¶</sup>	2,815	759	(28.1)	(25.3–30.8)
<b>Race/Ethnicity</b>				
White, non-Hispanic <sup>¶</sup>	3,374	932	(28.7)	(26.2–31.3)
Black, non-Hispanic	552	201	(37.5)	(31.2–43.8)**
Hispanic and other	414	132	(30.4)	(21.6–39.2)
<b>Marital status<sup>††</sup></b>				
Married	1,890	546	(30.4)	(27.1–33.6)
Unmarried <sup>¶</sup>	2,521	750	(31.3)	(27.9–34.7)
<b>Education level</b>				
Less than high school <sup>¶</sup>	1,082	277	(29.4)	(24.3–34.5)
High school	1,609	437	(29.9)	(26.1–33.7)
Some college	990	320	(32.0)	(27.1–36.9)
College or more	739	260	(33.1)	(27.8–38.4)
<b>Employment status</b>				
Employed <sup>¶</sup> §§	1,045	230	(24.7)	(19.7–29.7)
Unemployed	1,254	421	(34.3)	(29.6–39.0)**
Retired	2,117	646	(32.2)	(28.0–36.5)**
<b>Annual income (\$)</b>				
<15,000 <sup>¶</sup>	1,183	351	(29.0)	(24.2–33.7)
15,000–24,999	1,006	274	(33.0)	(28.0–38.1)
25,000–49,999	883	288	(35.1)	(29.8–40.4)
≥50,000	249	75	(26.1)	(20.8–31.5)
<b>Insurance coverage</b>				
Yes	4,011	1,186	(30.3)	(27.9–32.8)
No <sup>¶</sup>	398	107	(33.3)	(24.5–42.2)
<b>Metropolitan statistical area (MSA)</b>				
Center city of an MSA <sup>¶</sup>	1,218	399	(34.4)	(30.0–38.8)
MSA but not center city	1,379	408	(29.8)	(26.0–33.7)
Non-MSA	1,823	490	(27.4)	(24.0–30.8)**

\* Alabama, Arkansas, Connecticut, Georgia, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Montana, Nebraska, New Jersey, New York, North Dakota, Ohio, Oklahoma, South Carolina, Utah, Virginia, and West Virginia.

† Percentages weighted according to state population estimates; percentages reported are age adjusted except for age groups.

§ Confidence interval.

¶ Referent group in logistic regression analysis.

\*\*  $p < 0.05$  based on age-adjusted logistic regression comparing the prevalence with the referent group.

†† BRFSS includes six categories of marital status: 1) married, 2) divorced, 3) widowed, 4) separated, 5) never married, and 6) member of an unmarried couple. For this report, members of an unmarried couple ( $n = 45$ ; 1.0% of the sample) were counted in the married category.

§§ Employed category includes 11 students (0.25% of the sample).

**Reported by:** J Xie, MD, PhD, MG George, MD; C Ayala, PhD, HF McGruder PhD, CH Denny, PhD, JB Croft, PhD, Div for Heart Disease and Stroke Prevention, National Center for Chronic Disease Prevention and Health Promotion; AL Valderrama, PhD, EIS Officer, CDC.

**Editorial Note:** Increasing evidence indicates that effective stroke rehabilitation is beneficial to stroke survivors and society (4,6). However, the results in this report indicate that less than one third of stroke survivors reported receiving outpatient stroke rehabilitation. The prevalence of reported outpatient stroke rehabilitation was significantly higher among men than women, among non-Hispanic blacks than non-Hispanic whites [**Why higher rate?**], among unemployed and retired persons than among employed persons, and among adults living in the center city of an MSA than in a non-MSA.

Stroke rehabilitation should begin in the hospital as soon as acute stroke is diagnosed and the patient is medically stable (6). However, short-term benefits from inpatient stroke rehabilitation might not last over the long term, suggesting the need for continuing rehabilitation in an outpatient setting (6,7). Recent clinical practice guidelines recommend outpatient rehabilitation for less severely disabled patients who are discharged after receiving acute stroke care and for stroke patients who have been discharged from inpatient rehabilitation (4,6); therefore, the majority (i.e., >50%) of stroke survivors would be expected to receive some kind of outpatient rehabilitation if the guidelines were followed. Findings from this study indicate that the findings indicate that the prevalence of stroke survivors who are receiving outpatient stroke rehabilitation services is only 30.7%.

This lower than expected prevalence might be caused by a lack of resources, such as too few rehabilitation centers and clinics and inadequate access to rehabilitation staff, especially in rural or underserved areas. To increase prevalence of stroke rehabilitation health care, policy and environmental factors must be addressed. In addition, support from family and caregivers is essential for ensuring the receipt and continuation of outpatient rehabilitation among stroke survivors; the sex difference observed in the data might be partially a result of less support received by older female stroke survivors (10).

Outpatient rehabilitation can be provided in a freestanding or hospital outpatient facility or in a day hospital-care setting (6). A multidisciplinary team should be involved and, depending on the disability, can include a physician, a nurse, a physical therapist, an occupational therapist, a kinesiotherapist, a speech therapist, a psychologist, a recreational therapist, and the family or caregivers (6).

The findings in this report are subject to at least six limitations. First, the BRFSS rehabilitation question asks about receipt of outpatient stroke rehabilitation only [**Receipt versus recommended rehab—a limitation?**]. Therefore, the results do not provide information on inpatient rehabilitation services received by stroke survivors. Second, 21 states and DC administered the optional module; no nationwide estimate on the prevalence of outpatient stroke rehabilitation could

be calculated. Third, although the receipt of outpatient stroke rehabilitation is highly dependent on disease severity and patient medical status, information on these characteristics was not available. Adjustment for these factors might have changed the associations. Fourth, employment status referred to the respondent's current employment status at the time of the survey, not the employment status at the time of stroke. If stroke patients who were employed at the time of stroke but were subsequently unemployed or retired at the time of the survey are more likely to receive outpatient stroke rehabilitation than those who remained employed, the association between stroke rehabilitation and employment status in this study would be biased. Fifth, both stroke and stroke rehabilitation were self-reported and subject to recall bias; strokes that occurred at any time in the person's past were counted [**What are the implications of this limitation?**]. Finally, the BRFSS response rate was low; however, BRFSS data have been shown to provide valid and reliable estimates when compared with national household surveys in the United States [**Is this extrapolation applicable to stroke rehab?**] (8).

Stroke rehabilitation is an integral part of stroke systems of care, which include primary prevention, community education, notification of and prompt response by emergency medical services, acute stroke treatment, subacute stroke treatment and secondary prevention, rehabilitation, and continuous quality improvement activities (9). Stroke rehabilitation can help stroke survivors reach their physical, psychological, social, and vocational potential (9) through greater independence in activities of daily living, improved psychosocial well-being, better control of risk factors, and reduced risk for medical complications, recurrent stroke, and death (6).

The essential components of the American Stroke Association clinical practice guideline on stroke rehabilitation (6) include rehabilitation assessment, inpatient, outpatient and community-based rehabilitation. Availability of and access to rehabilitation facilities and specialized staff in the community, policies encouraging family support [**Example of such a policy?**], and physician and patient education might improve rehabilitation rate among stroke survivors. In addition, more research is needed to assess the prevalence of referral and receipt of both inpatient and outpatient stroke rehabilitation at the state and national levels. Public health measures should continue focusing on improving stroke systems of care, from stroke onset through final rehabilitation, to improve the overall outcomes among stroke patients.

## References

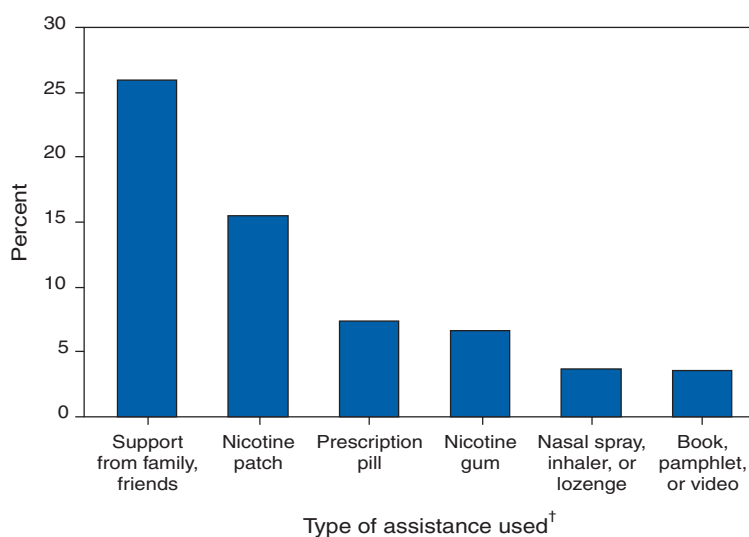
1. Rosamond W, Flegal K, Friday G, et al. Heart disease and stroke statistics—2007 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2007;115:e69–e171.

2. Rosenberg CH, Popelka GM. Post-stroke rehabilitation. A review of the guidelines for patient management. *Geriatrics* 2000;55:75–81.
3. Ryan T, Enderby P, Rigby AS. A randomized controlled trial to evaluate intensity of community-based rehabilitation provision following stroke or hip fracture in old age. *Clin Rehabil* 2006;20:123–31.
4. Heart and Stroke Foundation of Ontario. Stroke rehabilitation consensus panel report; 2000. Available at <http://209.5.25.171/Page.Asp?PageID=122&ContentID=432>.
5. Lee JA, Huber J, Stason WB. Poststroke rehabilitation in older Americans: The Medicare experience. *Medical care* 1996;34:81–25
6. Duncan PW, Zorowitz R, Bates B, et al. Management of Adult Stroke Rehabilitation Care: a clinical practice guideline. *Stroke* 2005;36:e100–43.
7. Hopman WM, Verner J. Quality of life during and after inpatient stroke rehabilitation. *Stroke* 2003;34:801–5.
8. Nelson DE, Holtzman D, Bolen J, Stanwyck CA, Mack KA. Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Soz Praventivmed* 2001;46(Suppl 1): S3–42.
9. Schwamm LH, Pancioli A, Acker JE, et al. Recommendations for the establishment of stroke systems of care—Recommendations from the American Stroke Association's Task Force on the Development of Stroke Systems. *Stroke* 2005;36:690–703.
10. Tsouna-Hadjis E, Vemmos KN, Zakopoulos N, Stamatelopoulos S. First-stroke recovery process: the role of family social support. *Arch Phys Med Rehabil* 2000;81:881–7.

## QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

### Assistance Used to Quit Smoking by Adults Aged $\geq 18$ Years\* During the Preceding 2 Years, by Type — National Health Interview Survey, United States, 2005



\* Data are based on household interviews of a sample of the civilian noninstitutionalized population.

<sup>†</sup> Respondents were allowed to select more than one type of assistance used to quit smoking or to indicate that they did not use any type presented in the survey.

Although many types of assistance to quit smoking are available, support from family and friends (25.9%) and nicotine patches (15.5%) were the most commonly used types in 2005. Other types used less frequently were prescription pills (7.4%); nicotine gum (6.7%); nasal sprays, inhalers, or lozenges (3.7%); and books, pamphlets, or videos (3.6%).

**SOURCE:** National Health Interview Survey, 2005. Available at <http://www.cdc.gov/nchs/nhis.htm>.