Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 62 / No. 44
November 8, 2013

Prevalence of Doctor-Diagnosed Arthritis and Arthritis-Attributable Activity Limitation — United States, 2010–2012

Arthritis is the most common cause of disability among U.S. adults and is particularly common among persons with multiple chronic conditions (*1*). In 2003, arthritis in the United States resulted in an estimated $128 billion in medical-care costs and lost earnings (*2*). To update previous U.S. estimates (*3*) of the prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation (AAAL), CDC analyzed 2010–2012 data from the National Health Interview Survey (NHIS). This report summarizes the results of that analysis, which found that 52.5 million (22.7%) of adults aged ≥18 years had self-reported doctor-diagnosed arthritis, and 22.7 million (9.8%, or 43.2% of those with arthritis) reported AAAL, matching and exceeding previous projected increases, respectively (*4*). Among persons with heart disease, diabetes, and obesity, the prevalences of doctor-diagnosed arthritis were 49.0%, 47.3%, and 31.2%, respectively; the prevalences of AAAL among persons with these specific conditions were 26.8%, 25.7%, and 15.2%, respectively. Greater use of evidence-based interventions, such as chronic disease self-management education and physical activity interventions that have been proven to reduce pain and improve quality-of-life among adults with chronic diseases might help reduce the personal and societal burden of arthritis.

NHIS is an annual, nationally representative, in-person interview survey of the health status and behaviors of the noninstitutionalized civilian U.S. population. In each household identified, one adult was randomly selected to complete the "sample adult" questionnaire.* Participants were categorized into five racial/ethnic groups: Hispanic, white, black, Asian, and other race. Persons identified as Hispanic might be of any race. Persons identified as white, black, Asian, or other race all were non-Hispanic. Sampling weights were applied to account for household nonresponse and oversampling of blacks, Hispanics, and Asians. Poststratification adjustments were applied by NCHS using 2000 U.S. Census estimates for the years 2010–2011, and 2010 U.S. Census estimates for 2012. For this analysis, NHIS data from 2010, 2011, and 2012 were combined, and annualized prevalence estimates were calculated overall and stratified by selected characteristics (i.e., sex, age group, race/ethnicity, education level, employment status, body mass index (BMI) category,† physical activity level,§ self-rated health, doctor-diagnosed heart disease,¶ and doctor-diagnosed diabetes). Unweighted sample sizes and final

* Survey description documents are available at http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm.

† BMI = weight (kg) / (height [m])^2. Categorized as follows: underweight/normal weight (<25.0), overweight (25.0 to <30.0), obese (≥30.0).

§ Determined from responses to six questions regarding frequency and duration of participation in leisure-time activities of moderate or vigorous intensity and categorized according to the U.S. Department of Health and Human Services *2008 Physical Activity Guidelines for Americans*. Total minutes (moderate to vigorous) of physical activity per week were categorized as follows: meeting recommendations (≥150 min per week), insufficient activity (1–149 min), and inactive (0 min).

¶ Adults were considered to have doctor-diagnosed heart disease if they answered "yes" to any of the following four questions: "Have you ever been told by a doctor or other health professional that you had coronary heart disease? Angina, also called angina pectoris? A heart attack (also called myocardial infarction? Any kind of heart condition or heart disease (other than the ones I just asked about)?"

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response rates were 27,157 (60.8%) in 2010, 33,014 (66.3%) in 2011; and 34,525 (61.2%) in 2012.

Adults were defined as having doctor-diagnosed arthritis if they answered "yes" to "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?" Those who responded "yes" were also asked, "Are you now limited in any way in any of your usual activities because of arthritis or joint symptoms?" Those responding "yes" to both questions were categorized as having AAAL. Prevalence of AAAL was estimated for the overall adult U.S. population and for adults with arthritis.

All analyses were weighted to account for the complex multistage sampling design. Unadjusted prevalence estimates for arthritis and AAAL describe the absolute population burden. Age-adjusted prevalence estimates (standardized to the projected 2000 U.S. standard population) describe relative population burden among various analytic subgroups. For all comparisons, differences were considered statistically significant if the 95% confidence intervals of the age-adjusted estimates did not overlap.

An estimated 22.7% (52.5 million) of U.S. adults reported doctor-diagnosed arthritis, including 49.7% of adults aged ≥65 years. High arthritis prevalence was observed among adults with heart disease (49.0%) and diabetes (47.3%). In age-adjusted analyses, arthritis prevalence was significantly higher among women than men, among whites and blacks compared with Hispanics and Asians, among those with less education, those who were obese or overweight, and those not meeting physical activity recommendations. Arthritis prevalence (age-adjusted) also was higher among those who were unable to work or were disabled (29.0%) compared with those who were employed (20.9%), and higher among those with self-reported fair or poor health (40.7%) compared with those reporting excellent or very good health (15.8%) (Table).

Among adults with doctor-diagnosed arthritis, the unadjusted overall prevalence of AAAL was 43.2% (22.7 million persons or 9.8% of the overall population). The highest AAAL prevalence among adults with arthritis was for those who reported fair or poor health (71.8%), were unable to work or disabled (61.4%), were physically inactive (56.5%), had less than a high school diploma (55.4%), had heart disease (54.6%), or had diabetes (54.4%). These patterns persisted after age-adjustment. Age-adjusted AAAL prevalence among adults with doctor-diagnosed arthritis was higher for Hispanics compared with whites, even though Hispanics' age-adjusted prevalence of arthritis in the general population was lower, suggesting greater average severity of arthritis among Hispanics (Table).

In unadjusted analyses, adults with heart disease (11.5%) and diabetes (9.0%), 49.0% and 47.3% had arthritis, respectively, and more than a quarter for each condition had AAAL. Among obese adults (28.2%), 31.2% had arthritis and 15.2% had AAAL (Table).

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 30333.

Suggested citation: Centers for Disease Control and Prevention. [Article title]. MMWR 2013;62:[inclusive page numbers].

TABLE. Unadjusted and age-adjusted* annualized prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation (AAAL)† among adults aged ≥18 years, and prevalence of AAAL among those with doctor-diagnosed arthritis, by selected characteristics — National Health Interview Survey, United States, 2010–2012

		Prevalence in the adult population								Prevalence of AAAL among adults with doctor-diagnosed arthritis			
		Doctor-diagnosed arthritis				AAAL							
		Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted	
Characteristic	%	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Overall	—	**22.7**	**(22.3–23.0)**	**21.4**	**(21.1–21.7)**	**9.8**	**(9.5–10.1)**	**9.2**	**(9.0–9.4)**	**43.2**	**(42.4–44.1)**	**40.7**	**(39.5–41.9)**
Age group (yrs)													
18–44	47.8	7.3	(7.0–7.6)	—	—	2.7	(2.6–2.9)	—	—	37.5	(35.4–39.7)	—	—
45–64	34.9	30.3	(29.8–30.9)	—	—	13.4	(12.9–13.9)	—	—	44.2	(42.9–45.5)	—	—
≥65	17.3	49.7	(48.7–50.6)	—	—	22.0	(21.3–22.8)	—	—	44.4	(43.2–45.6)	—	—
Sex													
Men	48.3	19.1	(18.6–19.7)	18.6	(18.2–19.0)	8.0	(7.7–8.4)	7.8	(7.5–8.1)	41.9	(40.5–43.3)	39.2	(37.2–41.3)
Women	51.7	26.0	(25.5–26.5)	23.9	(23.5–24.3)	11.5	(11.1–11.8)	10.5	(10.2–10.8)	44.2	(43.2–45.2)	41.7	(40.2–43.2)
Race/Ethnicity§													
White	68.0	25.9	(25.5–26.4)	22.9	(22.5–23.3)	10.8	(10.5–11.1)	9.5	(9.2–9.7)	41.7	(40.7–42.6)	39.3	(37.8–40.8)
Black	11.9	21.3	(20.3–22.2)	22.4	(21.6–23.2)	10.5	(9.8–11.2)	11.0	(10.4–11.7)	49.3	(47.2–51.4)	47.0	(44.4–49.7)
Hispanic	14.3	12.1	(11.5–12.7)	15.9	(15.2–16.6)	5.9	(5.5–6.3)	8.0	(7.5–8.6)	48.8	(46.3–51.4)	44.8	(41.5–48.2)
Asian	4.9	11.0	(10.0–12.0)	12.1	(11.2–13.1)	4.5	(3.9–5.2)	5.1	(4.5–5.8)	41.1	(36.6–45.7)	30.4	(25.2–36.2)
Other races	0.8	27.0	(23.2–31.2)	27.9	(24.3–31.9)	16.3	(13.3–19.8)	17.0	(14.1–20.4)	60.1	(52.4–67.4)	55.8	(45.7. 65.4)
Education level													
<High school diploma	14.2	25.7	(24.8–26.6)	21.9	(21.2–22.7)	14.2	(13.5–15.0)	12.2	(11.5–12.8)	55.4	(53.6–57.3)	53.9	(50.4–57.3)
High school diploma	26.6	25.6	(25.0–26.3)	23.0	(22.4–23.5)	11.4	(11.0–11.9)	10.2	(9.8–10.6)	44.6	(43.1–46.0)	42.2	(40.0–44.4)
At least some college	31.0	22.7	(22.1–23.4)	23.3	(22.8–23.8)	9.6	(9.2–10.1)	9.9	(9.5–10.3)	42.4	(40.9–43.8)	40.6	(38.6–42.6)
Completed college or greater	28.1	18.3	(17.7–18.9)	17.8	(17.2–18.3)	6.2	(5.8–6.5)	6.0	(5.7–6.3)	33.7	(32.1–35.3)	30.4	(28.4–32.4)
Body mass index (BMI)¶													
Under/Normal weight	37.1	15.9	(15.4–16.4)	16.3	(15.9–16.7)	6.3	(6.0–6.6)	6.5	(6.2–6.8)	39.8	(38.4–41.3)	38.2	(35.8–40.7)
Overweight	34.7	22.6	(22.0–23.2)	20.3	(19.8–20.8)	8.8	(8.4–9.2)	7.9	(7.5–8.2)	38.9	(37.6–40.2)	37.2	(35.3–39.2)
Obese	28.2	31.2	(30.5–32.0)	28.9	(28.3–29.5)	15.2	(14.7–15.7)	14.0	(13.5–14.5)	48.6	(47.3–49.9)	44.8	(42.9–46.6)
Physical activity**													
Meeting recommendations	48.3	17.4	(17.0–17.8)	18.6	(18.2–19.0)	5.3	(5.0–5.5)	5.6	(5.4–5.9)	30.2	(29.0–31.5)	29.3	(27.7–31.0)
Insufficient activity	20.0	25.3	(24.6–26.1)	23.3	(22.6–24.0)	10.3	(9.8–10.8)	9.4	(8.9–9.9)	40.6	(38.8–42.4)	38.9	(36.6–41.3)
Inactive	31.6	28.9	(28.2–29.7)	24.0	(23.4–24.6)	16.3	(15.8–16.9)	13.5	(13.0–13.9)	56.5	(55.2–57.7)	54.8	(52.7–56.8)
Employment status													
Employed/Self–employed	64.9	18.8	(18.4–19.2)	20.9	(20.5–21.4)	7.9	(7.7–8.2)	9.0	(8.7–9.4)	42.3	(41.1–43.6)	40.0	(38.5–41.5)
Unemployed	7.2	14.0	(12.8–15.2)	19.0	(17.3–20.8)	6.1	(5.5–6.9)	8.4	(7.2–9.8)	43.9	(40.0–47.9)	43.2	(38.8–47.8)
Unable to work/Disabled	1.5	29.5	(26.7–32.5)	29.0	(26.3–31.8)	18.1	(15.8–20.7)	17.5	(15.1–20.2)	61.4	(55.7–66.9)	61.7	(54.2–68.7)
Other††	26.5	34.2	(33.4–35.1)	21.4	(20.8–22.1)	14.9	(14.4–15.4)	9.2	(8.8–9.6)	43.4	(42.2–44.6)	41.0	(37.7–44.5)
Self–rated health													
Very good/Excellent	60.3	14.4	(14.0–14.8)	15.8	(15.4–16.1)	3.4	(3.2–3.6)	3.7	(3.5–5.9)	23.5	(22.4–24.6)	22.3	(20.8–23.9)
Good	26.7	28.0	(27.3–28.7)	24.4	(23.8–25.0)	11.6	(11.1–12.0)	10.0	(9.6–10.4)	41.3	(40.0–42.7)	39.9	(37.7–42.1)
Fair/Poor	13.0	50.1	(49.1–51.2)	40.7	(39.5–41.9)	35.9	(34.9–36.9)	28.8	(27.8–29.9)	71.8	(70.5–73.0)	69.8	(67.8–71.8)
Heart disease§§													
Yes	11.5	49.0	(47.9–50.2)	35.4	(34.0–36.8)	26.8	(25.8–27.7)	19.4	(18.4–20.4)	54.6	(53.0–56.1)	54.0	(50.6–57.3)
No	88.5	19.2	(18.9–19.6)	19.6	(19.3–19.9)	7.6	(7.3–7.8)	7.7	(7.5–7.9)	39.4	(38.5–40.3)	37.8	(36.6–39.1)
Diabetes¶¶													
Yes	9.0	47.3	(46.0–48.6)	34.0	(32.5–35.7)	25.7	(24.6–26.9)	18.8	(17.6–20.1)	54.4	(52.4–56.3)	55.9	(52.0–59.7)
No	91.0	20.2	(19.9–20.6)	20.2	(19.9–20.5)	8.2	(8.0–8.5)	8.2	(8.0–8.4)	40.6	(39.7–41.5)	38.7	(37.4–39.9)

Abbreviation: CI = confidence interval.

* Age adjusted to the 2000 U.S. projected adult population, using three age groups: 18–44, 45–64, and ≥65 years.

† Doctor–diagnosed arthritis was defined as an affirmative response to the question, "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia? Those who answered "yes" were asked, "Are you now limited in any way in any of your usual activities because of arthritis or joint symptoms?" Persons responding "yes" to both questions were defined as having AAAL.

§ Race/ethnicity categories are mutually exclusive. Persons identified as Hispanic might be of any race. Persons identified as white, black, Asian, or other race all were non-Hispanic.

¶ BMI = self–reported weight (kg) / (height [m])^2. Categorized as follows: underweight/normal weight (<25.0), overweight (25.0 to <30.0), obese (≥30.0).

** Determined from responses to six questions regarding frequency and duration of participation in leisure–time activities of moderate or vigorous intensity and categorized according to the U.S. Department of Health and Human Services *2008 Physical Activity Guidelines for Americans*. Total minutes (moderate to vigorous) of physical activity per week were categorized as follows: meeting recommendations (≥150 min per week), insufficient activity (1–149 min), and inactive (0 min).

†† Students, volunteers, homemakers, and retirees.

§§ Adults were considered to have doctor–diagnosed heart disease if they answered "yes" to any of the following four questions: "Have you ever been told by a doctor or other health professional that you had coronary heart disease? Angina, also called angina pectoris? A heart attack (also called myocardial infarction)? Any kind of heart condition or heart disease (other than the ones I just asked about)?"

¶¶ Adults were considered to have doctor–diagnosed diabetes disease if they answered "yes" to "Have you ever been told by a doctor or health professional that you have diabetes or sugar diabetes?"

What is already known on this topic?

Arthritis is the most common cause of disability among U.S. adults, resulting in annual costs estimated at $128 billion in 2003, and is particularly common among persons with multiple chronic conditions.

What is added by this report?

During 2010–2012, an estimated 22.7% of adults had self-reported doctor-diagnosed arthritis, and 43.2% of those with arthritis reported arthritis-attributable activity limitations (AAAL). Approximately half of all adults with heart disease or diabetes had arthritis, and one fourth of adults with either condition and arthritis had AAAL. Approximately one third of adults who were obese also had arthritis, and 15% of those adults had AAAL.

What are the implications for public health practice?

Health-care providers and public health practitioners can address both arthritis and other chronic conditions by prioritizing self-management education and appropriate physical activity as effective ways to improve health outcomes (e.g., reducing pain and increasing function and quality-of-life).

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Editorial Note

During 2010–2012, an estimated 52.5 million (22.7%) of adults in the United States reported doctor-diagnosed arthritis, and 22.7 million (9.8%) reported AAAL (43.2% of those with arthritis). These estimates represent net increases of 0.87 million adults with arthritis per year and 0.53 million adults with AAAL per year since the 2007–2009 estimates of 49.9 million with arthritis and 21.1 million with AAAL (*3*). These increases can be attributed, in part, to the aging of the U.S. population. The arthritis estimate is consistent with an earlier projection and suggests that projections of 55.7 million adults with arthritis by 2015 and 67 million by 2030 (*4*) are reasonable. For AAAL, the estimate exceeds the earlier projection of 22 million adults with AAAL by 2020 and, therefore, might exceed the 25 million projected for 2030 (*4*).

Arthritis and AAAL create a substantial personal and societal burden in the United States. Arthritis and AAAL prevalences were greater in the same age, sex, race/ethnicity, and education subgroups as seen previously (*3*), and exceptionally high among those who were unable to work or were disabled and those with fair or poor health, even when adjusted for age. About half of all adults with heart disease or diabetes had arthritis, and more than a quarter of adults with either condition and arthritis had AAAL; almost one third of adults who were obese also had arthritis, and more than 15% of these adults had AAAL. The high prevalence of arthritis among adults with these conditions in the general population is consistent with the results of a previous study on co-occurrence of chronic diseases among adults aged ≥25 years who participated in NHIS, in which arthritis was among the most common comorbidities (*5*). The negative effects of combinations of arthritis and other chronic conditions are suggested by the AAAL findings in this analysis, along with studies identifying arthritis as associated with greater physical inactivity for adults with multiple chronic conditions (*6*–*8*).

The findings in this report are subject to at least four limitations. First, doctor-diagnosed arthritis was self-reported and not confirmed by a health-care professional; however, this case definition has been shown to be sufficiently sensitive for public health surveillance (*9*). Second, because NHIS is a cross-sectional survey, a causal relationship between risk factors (i.e., obesity or physical activity) and arthritis and AAAL could not be established. Nonetheless, obesity is a factor that increases risk for osteoarthritis; a prospective study with 10 years of follow-up found that obese adults were more than twice as likely to develop knee and hand osteoarthritis (*10*). Third, social desirability bias might play a role in some self-report characteristics, with underreporting of weight, overreporting of height, and overreporting of leisure-time physical activity. Finally, because response rates ranged from 60.8% to 66.3% the findings might be subject to selection bias, although the application of sampling weights is expected to considerably reduce nonresponse bias.

A current U.S. Department of Health and Human Service initiative** addresses the burden of multiple chronic conditions, which now affect one in four adults and are increasingly common with the aging of the population. The findings in this report indicate that arthritis commonly co-occurs with obesity as well as heart disease and diabetes, and that high prevalence of AAAL is found among adults with both arthritis and one of these chronic conditions. CDC is promoting greater coordination with state health departments to address these chronic disease comorbidity concerns.†† An opportunity for collaboration is the dissemination of information regarding evidence-based self-management education and physical activity interventions§§ that have been proven to reduce pain

** Available at http://www.hhs.gov/ash/initiatives/mcc.
†† Available at http://www.cdc.gov/chronicdisease/about/statepubhealthactions-prevcd.htm.
§§ Additional information available at http://www.cdc.gov/arthritis/interventions.htm.

and improve function, mood, confidence to manage health, and quality of life. The physical activity interventions recommended are appropriate exercise regimens intended to reduce activity limitations among adults with arthritis and assuage concerns over aggravating the condition.¶¶ CDC currently funds arthritis programs in 12 states to disseminate information and implement programs in local communities.*** Given the high prevalence of arthritis and AAAL among adults with certain chronic conditions and the arthritis-specific barriers to activity (*6*–*8*), health-care providers and public health practitioners can address both arthritis and these other chronic conditions by prioritizing self-management education and appropriate physical activity as an effective way to improve health outcomes.

¶¶ Additional information available at http://www.cdc.gov/arthritis/pa_overview.htm.

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Multistate Outbreak of *Campylobacter jejuni* Infections Associated with Undercooked Chicken Livers — Northeastern United States, 2012

In October 2012 the Vermont Department of Health (VDH) identified three cases of laboratory-confirmed *Campylobacter jejuni* infection in Vermont residents; the isolates had indistinguishable pulsed-field gel electrophoresis (PFGE) patterns. A query of PulseNet, the national molecular subtyping network for foodborne disease surveillance, led to the identification of one additional case each from New Hampshire, New York, and Vermont that had been reported in the preceding 6 months. An investigation led by VDH found that all six patients had been exposed to raw or lightly cooked chicken livers that had been produced at the same Vermont poultry establishment (establishment A). Livers collected from this establishment yielded the outbreak strain of *C. jejuni*. In response, establishment A voluntarily ceased the sale of chicken livers on November 9. A food safety assessment conducted by the U.S. Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) found no major violations at the establishment. This is the first reported multistate outbreak of campylobacteriosis associated with chicken liver in the United States. Public health professionals, members of the food industry, and consumers should be aware that chicken livers often are contaminated with *Campylobacter* and that fully cooking products made with chicken liver is the only way to prepare them so they are safe to eat.

Epidemiologic Investigation

On October 2, 2012, VDH identified two laboratory-confirmed cases of *C. jejuni* infection with indistinguishable *Sma*I and *Kpn*I PFGE patterns (DBRS16.1508 and DBRK02.0049). Patient 1 became ill with diarrhea on September 16 and reported working at a Vermont poultry establishment (establishment A); his food history was unremarkable and did not include any products from establishment A. His work duties involved handling live and slaughtered chickens and turkeys. Patient 2 also became ill on September 16 and was hospitalized 4 days later. He reported eating a charcuterie (meat platter) appetizer and rabbit entree at a Vermont restaurant (restaurant A) 2 days before his illness onset. The charcuterie included a mousse made from chicken livers produced at establishment A.

Patient 3 became ill on September 20; she reported eating the same menu items at restaurant A 1 day after patient 2. The *C. jejuni* isolate from her stool specimen yielded a PFGE pattern indistinguishable from the outbreak strain.

A retrospective cohort study of patrons who dined at restaurant A within 2 days of the patients with confirmed *C. jejuni* infection was conducted. Contact information was obtained from the restaurant's reservation list. A total of 43 diners were contacted in addition to patients 1 and 2; one diner declined to participate in the study. Diners were asked what they ate and whether they experienced any diarrhea in the subsequent 10 days. No additional diners reported diarrhea; therefore, no probable cases were identified.

Nineteen menu items were analyzed for a statistical association with illness by calculating relative risks (RR). A value of 0.5 was added to all cells in 2x2 tables that contained a zero. Consumption of only two menu items showed a statistically significant relative risk of illness: charcuterie that included chicken liver mousse (RR = 52.5, 95% confidence interval [CI] = 3.0–914.8) was consumed by three patrons, and rabbit (RR = 33.3, CI = 1.8–613.5) was consumed by five. Although limited by a small sample size (resulting in wide CIs), the higher relative risk associated with consuming charcuterie as well as isolation of the outbreak strain of *C. jejuni* in a worker at establishment A, where the chicken livers were produced, focused the investigation on chicken livers.

PulseNet identified a fourth Vermont isolate indistinguishable by PFGE from the outbreak strain. Patient 4 had not reported eating chicken livers when originally interviewed in June 2012 by VDH, which investigates all reports of campylobacteriosis. But upon reinterview as part of this investigation, patient 4 reported eating pan-fried chicken livers at another Vermont restaurant (restaurant B) several days before becoming ill. An interview with restaurant B staff members revealed that establishment A was the source of their chicken livers in June 2012.

VDH notified other New England states in which establishment A products were distributed and requested information on any patients with *C. jejuni* infection who reported consumption of chicken livers or whose isolates had PFGE patterns indistinguishable from the outbreak strain. PulseNet identified one April 2012 isolate from a New Hampshire resident (patient 5) with a *Sma*I PFGE pattern indistinguishable from the outbreak strain. The New Hampshire Department of Health and Human Services performed additional PFGE testing on this isolate using *Kpn*I and found the pattern to be indistinguishable from the outbreak strain. Patient 5 reported purchasing raw chicken livers from a New Hampshire grocery store and cooking them to medium rare at home for herself and family members, one of whom was a female New York resident (patient 6) who had been hospitalized in April 2012 with *C. jejuni* infection. Following notification of the outbreak,

New York state analyzed the isolate from patient 6 and found its PFGE pattern indistinguishable from the outbreak strain.

The six patients ranged in age from 19 to 87 years (median: 53.5 years); three were female. Two were hospitalized, but all six had recovered by the time of their initial interviews.

Environmental Investigation

VDH inspected restaurants A and B. Both restaurants passed inspection with no critical violations noted. Stool specimens collected from all eight food handlers at restaurant A did not yield *Campylobacter*. Both restaurants confirmed that they received fresh chicken livers from establishment A and froze them until needed. Interviews with both chefs revealed that chicken livers were lightly cooked to maintain their texture. In accordance with VDH health regulations for food service establishments, the menu at both restaurants contained the required general consumer advisory regarding the increased risk of foodborne illness from consuming raw or undercooked poultry. VDH regulations do not require that the menus at food service establishments identify specific food items that are potentially hazardous and served raw or undercooked; therefore, the chicken liver dishes at restaurants A and B were not individually labeled as lightly cooked.

The New Hampshire Department of Health and Human Services reviewed grocery store records and, based on the purchase date reported by patient 5, identified establishment A as the source of the livers that patients 5 and 6 consumed.

USDA-FSIS conducted a food safety assessment at establishment A and found that the establishment had a well-designed food safety system, which included application of antimicrobial cleaners to the poultry products. When observed during the assessment, these cleaners were used as intended to reduce contamination on the surfaces of all poultry carcasses and parts. The assessment revealed no extrinsic factors, such as cross contamination, that would likely cause the chicken livers to be tainted.

Laboratory Investigation

Frozen chicken livers collected from restaurant A were sent to the VDH laboratory, where they were minced into 13 25-gram subsamples and enriched in accordance with the instructions for the *Campylobacter* immunoassay. Two of the 13 subsamples screened with the immunoassay for the presence of *Campylobacter* gave positive results, but the pathogen could not be recovered in culture.

VDH then collected fresh chicken livers directly from establishment A and delivered them to the VDH laboratory, where they were processed in accordance with testing instructions. *C. jejuni* was recovered from these chicken livers, and one isolate had PFGE patterns indistinguishable from the outbreak strain.

Additional characterization of the six human isolates and one chicken liver isolate by antimicrobial susceptibility testing identified this outbreak strain as susceptible to eight of nine antimicrobials tested on the CDC National Antimicrobial Resistance Monitoring System panel, but resistant to tetracycline. Multilocus sequence typing identified the outbreak strain as sequence type 1212.

Establishment A was notified of the results of the investigation on November 9. The establishment ceased selling chicken livers that same day.

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Editorial Note

Campylobacter is the third-leading cause of bacterial foodborne illness in the United States (*1*), and poultry exposure is a well-recognized risk factor for infection. Poultry-associated campylobacteriosis is the pathogen-food pair estimated to be responsible for the greatest burden of foodborne disease in the United States (*2*). Despite this, documented outbreaks of *Campylobacter* are relatively rare, with only 1.9% of all foodborne outbreaks reported to CDC's National Outbreak Reporting System attributed to this pathogen (*3*). Rarer still are documented *Campylobacter* outbreaks caused by poultry livers. Between 1997 and 2008, five such outbreaks were reported, but only two of these reports confirmed poultry livers as the vehicle (*4*). Unlike the outbreak reported here, none of these previous outbreaks were multistate, nor did any previous investigation confirm livers as the outbreak source using laboratory evidence.

Outbreaks of *Campylobacter* infections linked to chicken livers have been reported in the United Kingdom (*5*) and Australia (*6*). Since 2007, England and Wales have seen a significant increase in the proportion of *Campylobacter* outbreaks linked to chicken livers used in pâté (*7*).

What is already known on this topic?

Campylobacter is a common cause of bacterial foodborne illness, but documented outbreaks caused by the pathogen are relatively rare in the United States. *Campylobacter* outbreaks caused by consumption of undercooked chicken liver have been well documented overseas.

What is added by this report?

Chicken livers from a Vermont poultry establishment were implicated as the cause of an outbreak of *Campylobacter jejuni* infection in the northeastern United States in 2012. Six patients were identified; two were hospitalized. Five patients were exposed through consumption of chicken livers; one patient worked at the establishment where the livers were produced. Raw livers yielded the outbreak strain of *C. jejuni*. Inspection of the poultry producer and two restaurants associated with three of the cases revealed no significant defects in food storage or preparation except that chicken livers were not thoroughly cooked. In response to the investigation, the poultry producer permanently halted the sale of this product.

What are the implications for public health practice?

Public health officials, food industry personnel, and consumers should be aware that chicken livers often are contaminated internally with *Campylobacter* and cannot be made safe to eat without being fully cooked. Pulsed-field gel electrophoresis of *Campylobacter* isolates can be a helpful tool for investigating suspected outbreaks and might assist with case finding, which could lead to a more accurate assessment of the scope of an outbreak.

These outbreaks should not come as a surprise, given that previous studies have shown that 77% of retail chicken livers are contaminated with *Campylobacter* (*8*) and that, when contamination is present, it is usually in internal tissues, as well as on the surface (*9*). The Food and Drug Administration food code states that poultry must reach an internal temperature of 165ºF (73.9ºC) for at least 15 seconds. Studies outside the United States have found that in order for chicken livers to be free of *Campylobacter* they must be heated to internal temperatures in excess of 158ºF (70ºC) and held at that temperature for 2–3 minutes (*9*). In this investigation, the livers were found to be intentionally cooked lightly to maintain a desired texture and taste. This practice might be common, particularly when preparing chicken livers for use in a mousse or pâté. A popular recipe for this dish instructs readers to cook "until the livers are just stiffened, but still rosy inside" (*10*).

Although USDA-FSIS found that establishment A applied antimicrobial cleaners to the livers, these efforts only affect the external surfaces of chicken livers, and because *Campylobacter* contamination can be internal, the safety of undercooked chicken livers cannot be assured. Ultimately, establishment A stopped selling chicken livers.

Vermont is one of the few states that investigates all reported cases of campylobacteriosis and performs PFGE on all *Campylobacter* isolates submitted to the VDH laboratory. This strategy, along with the combined efforts of state and federal partners, enabled the timely detection of the outbreak and identification of the source. This investigation emphasizes the potential risk for *Campylobacter* infection from consumption of undercooked chicken livers and the potential for this pathogen-food pair to cause outbreaks in the United States.

Acknowledgments

Al Burns, Taylor Gillich, Jeffrey Heath, Patricia Hennard, Patsy Kelso, Susan Schoenfeld, Vermont Dept of Health. Katherine McNamara, Shelley Mehlenbacher, Vermont Agency of Agriculture. Madhu Anand, MPH, CPH, New York State Dept of Health. Julie Aebi, Thomas Collaro, Alice Green, Bonnie Kissler, US Dept of Agriculture–Food Safety and Inspection Svc.

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Youth Exposure to Alcohol Advertising on Television — 25 Markets, United States, 2010

Excessive alcohol consumption accounted for an estimated 4,700 deaths and 280,000 years of potential life lost among youths aged <21 years each year during 2001–2005 (*1*). Exposure to alcohol marketing increases the likelihood to varying degrees that youths will initiate drinking and drink at higher levels (*2*). By 2003, the alcohol industry voluntarily agreed not to advertise on television programs where >30% of the audience is reasonably expected to be aged <21 years. However, the National Research Council/Institute of Medicine (NRC/IOM) proposed in 2003 that "the industry standard should move toward a 15% threshold for television advertising" (*3*). Because local media markets might have different age distributions, the Center on Alcohol Marketing and Youth, Johns Hopkins Bloomberg School of Public Health, evaluated the proportion of advertisements that appeared on television programs in 25 local television markets* and resulting youth exposure that exceeded the industry standard (i.e., >30% aged 2–20 years) or the proposed NRC/IOM standard (i.e., >15% aged 12–20 years). Among national television programs with alcohol advertising, placements were assessed for the 10 programs with the largest number of youth viewers within each of four program categories: network sports, network nonsports, cable sports, and cable nonsports (40 total). Of the 196,494 alcohol advertisements that aired on television programs with the largest number of youth viewers in these local markets, placement of 23.7% exceeded the industry threshold and 35.4% exceeded the NRC/IOM threshold. These results indicate that the alcohol industry's self-regulation of its advertising could be improved, and youth exposure to alcohol advertising could be further reduced by adopting and complying with the NRC/IOM standard. In addition, continued public health surveillance would allow for sustained assessment of youth exposure to alcohol advertising and inform future interventions.

Nielsen Station Index Local People Meter Market Survey† data for 2010 were used to assess exposure to alcohol advertisements placed on nationally telecast programs among a sample of households in 25 local media markets, as well as the demographic characteristics of program viewers aged ≥2 years in these markets (approximately 98.9% of all U.S. households have televisions) (*4*). In 2010, these 25 media markets were among the largest in the United States and accounted for 50.3% of the total U.S. population aged 12–20 years living in homes with televisions (*5*).

Advertising exposure was analyzed first using the current voluntary industry standard, which calls for no alcohol advertising during programs for which persons aged 2–20 years composed >30% of the expected audience. Exposure also was analyzed using the NRC/IOM proposed standard that called on industry to move toward a 15% threshold for television advertising using persons aged ≥12 years as the denominator.§ Alcohol use usually begins in early adolescence; federal surveys begin measuring youth drinking at age 12 years, and age 21 years is the minimum legal age for the purchase of alcohol in all 50 states. The local population was used as the denominator to account for differences in the age distribution of local media markets.

Among nationally televised programs with alcohol advertising, exposure to this advertising was evaluated for the 10 programs with the largest number of youth viewers in each of four program categories: cable sports, cable nonsports, broadcast network sports, and broadcast network nonsports (i.e., 40 programs in total) in each of the 25 television media

* Television media markets studied included Atlanta, Georgia; Baltimore, Maryland; Boston, Massachusetts; Charlotte, North Carolina; Chicago, Illinois; Cleveland, Ohio; Dallas, Texas; Denver, Colorado; Detroit, Michigan; Houston, Texas; Los Angeles, California; Miami, Florida; Minneapolis, Minnesota; New York, New York; Orlando, Florida; Philadelphia, Pennsylvania; Phoenix, Arizona; Pittsburgh, Pennsylvania; Portland, Oregon; Sacramento, California; San Francisco, California; Seattle, Washington; St. Louis, Missouri; Tampa, Florida; and Washington, DC. These 25 media markets represent 25 of the 26 largest television markets by population. Raleigh-Durham, North Carolina, the 25th largest market, was excluded because it did not have Nielsen Local People Meter data at of the time of this analysis.

† Introduced by Nielsen in 2002, Local People Meters measure viewing behavior and viewer demographics and have been phased into the largest television markets over the past decade. In comparison with traditional paper diary methods, or with earlier-generation channel-tuning meters supplemented by paper diaries to obtain demographic viewing estimates, Local People Meters are more precise and are now widely accepted by advertisers, television networks, and television stations as the standard for measuring local viewing in larger markets.

§ The rationale for 30% was to limit advertisements to media in which the legal-age adult audience (aged ≥21 years) was proportional to the legal-age adult population, at that time 70%. This standard has most recently been revised to 28.4% underage (71.6% legal age) based on 2010 census data. However, not all youths are at equal risk for drinking. For example, few youths ages 2–11 years engage in drinking behaviors, and the youngest age at which federal surveys begin measuring drinking behavior is 12 years. Thus, the 15% standard is based on the at-risk population of youths aged 12–20 years, which makes up approximately 15% of the U.S. population aged ≥12 years.

markets. Nationally, these programs represented 29% of all youth exposure to alcohol advertising on broadcast network nonsports, 20% on broadcast network sports, 20% on cable sports, and 14% on cable nonsports. The total number of gross impressions,[¶] an indicator used by the advertising industry to measure advertising exposure, was calculated by summing the placement-specific number of viewers of different ages across all advertising placements for a particular market. A total of 196,494 alcohol product advertisements aired on the 40 programs that were assessed across the 25 markets, or approximately 7,860 advertisements per market; however, not all advertisements appeared in all markets.

Of the 196,494 total alcohol advertisements, 46,493 (23.7%) were placed during programs for which >30% of the audience was aged 2–20 years (range: 31.5% in Houston, Texas, to 16.3% in Washington, DC); and 69,622 (35.4%) were placed during programs that exceeded the 15% threshold (range: 45.2% in Chicago, Illinois, to 25.9% in Portland, Oregon) (Table 1).[**] Of the 797,571,000 total alcohol advertising impressions among youths aged 12–20 years that resulted from these advertisements, 33.3% were from advertisements that were placed in programs exceeding the 30% threshold (range: 45.4% in Orlando-Daytona Beach-Melbourne, Florida, to 25.2% in Washington, DC); and 54.4% were from advertisements on programs that exceeded the 15% threshold (range: 65.3% in New York, New York, to 42.0% in Boston, Massachusetts) (Table 2).[††]

[¶] An advertising impression occurs when one person sees an advertisement. If an advertisement is seen by five different people, that counts as five impressions. Gross impressions are the sum of impressions for any given advertising campaign, and include multiple exposures for some or all of the people who are exposed to that campaign.

[**] Table 1 shows the top and bottom five markets with youth audiences in excess of 30%. Portland was the low market on the 15% standard, but was not in the bottom five for the 30% standard, so it does not appear in the table.

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Editorial Note

The findings in this report indicate that in 25 of the largest television markets in the United States, almost one quarter of the alcohol advertisements airing on this sample of national television programs popular with youths had local underage audiences >30%, exceeding the alcohol industry's voluntary 2003 self-regulatory codes, and more than one third aired during programs that exceeded the NRC/IOM recommended threshold of 15% youth audience composition. Although the total number of advertising occurrences was consistent in each of the 25 markets, youth exposure to alcohol advertising

[††] Data for all 25 markets available at http://www.camy.org.

TABLE 1. Number and percentage of television alcohol advertisements that aired locally during programming viewed by greater than recommended percentages of underage youths,* by audience composition and television market — United States, 2010

Market	Local market population aged 12–20 yrs (%)	Total no. of advertising occurrences	Advertisements in programming that exceeded youth audience composition threshold			
			>30% audience		>15% audience	
			No.	(%)	No.	(%)
Top five markets by proportion >30%						
Houston, Texas	(13.7)	7,862	2,476	(31.5)	3,256	(41.4)
Los Angeles, California	(13.8)	7,869	2,364	(30.0)	3,509	(44.6)
Dallas-Ft. Worth, Texas	(13.2)	7,862	2,334	(29.7)	3,055	(38.9)
Atlanta, Georgia	(12.9)	7,859	2,169	(27.6)	3,103	(39.5)
Chicago, Illinois	(13.3)	7,862	2,160	(27.5)	3,550	(45.2)
Bottom five markets by proportion >30%						
Seattle-Tacoma, Washington	(11.8)	7,869	1,469	(18.7)	2,711	(34.5)
San Francisco-Oakland-San Jose, California	(11.3)	7,869	1,447	(18.4)	2,365	(30.1)
Boston (Manchester), Massachusetts	(12.0)	7,844	1,367	(17.4)	2,124	(27.1)
Sacramento-Stockton-Modesto, California	(13.6)	7,869	1,339	(17.0)	2,337	(29.7)
Washington, DC (Hagerstown)	(12.1)	7,859	1,284	(16.3)	2,062	(26.2)
Total (all markets)	—	**196,494**	**46,493**	**(23.7)**	**69,622**	**(35.4)**

Source: The Nielsen Company, New York, New York.

* Aged 12–20 years. The alcohol industry voluntarily agreed not to advertise on television programs where >30% of the audience is reasonably expected to be aged <21 years, here assessed as viewers ages 2–20 years. The National Research Council/Institute of Medicine proposed that "the industry standard should move toward a 15% threshold for television advertising," assessed here for programming for which >15% of all viewers aged ≥12 years were aged 12–20 years.

TABLE 2. Proportion of television alcohol advertising exposures to underage youths* that exceeded voluntary and proposed thresholds† for underage audience composition, by market — United States, 2010

Local markets	Local market population aged 12–20 yrs (%)	Total no. of youth advertising exposures (000s)	Youth television advertising exposures exceeding audience composition thresholds (%)	
			>30% audience	>15% audience
Top five markets by proportion >30%				
Orlando-Daytona Beach-Melbourne, Florida	(11.6)	24,078	(45.4)	(59.6)
Houston, Texas	(13.7)	32,683	(43.0)	(61.6)
Pittsburgh, Pennsylvania	(11.9)	13,319	(40.9)	(59.1)
Tampa-St. Petersburg (Sarasota), Florida	(11.0)	24,326	(40.8)	(57.9)
Detroit. Michigan	(13.3)	25,749	(39.0)	(63.5)
Bottom five markets by proportion >30%				
Charlotte, North Carolina	(12.3)	15,833	(29.4)	(56.9)
San Francisco-Oakland-San Jose, California	(11.3)	22,484	(29.3)	(47.1)
Boston (Manchester), Massachusetts	(12.0)	28,858	(26.5)	(42.0)
Sacramento-Stockton-Modesto, California	(13.6)	17,567	(25.6)	(48.4)
Washington, DC (Hagerstown)	(12.1)	27,022	(25.2)	(43.7)
Total impressions	—	**797,571**	**(33.3)**	**(54.4)**

Source: The Nielsen Company, New York, New York.
* Aged 12–20 years.
† The alcohol industry voluntarily agreed not to advertise on television programs where >30% of the audience is reasonably expected to be aged <21 years, here assessed as viewers ages 2–20 years. The National Research Council/Institute of Medicine proposed that "the industry standard should move toward a 15% threshold for television advertising," assessed here for programming for which >15% of all viewers aged ≥12 years were aged 12–20 years.

exceeding the 30% standard varied across these markets. If the advertising exceeding the industry threshold of 30% were eliminated and not replaced, total youth exposure to alcohol advertising on these programs would drop by one third. If alcohol companies were to eliminate and not replace advertisements above the NRC/IOM recommended limit of 15%, total youth exposure to alcohol advertising on these programs would drop by an estimated 54%.

From 2001 to 2009, youth exposure to alcohol advertising on television in the United States increased by 71% (*6*). This is largely attributable to increased alcohol advertising on cable television programs, particularly by distilled spirits companies (*6*). The increase in spirits advertising on cable television also coincides with an observed increase in consumption of spirits by high school students, particularly among those who binge drink (i.e., consume ≥5 drinks on an occasion for males and ≥4 drinks on an occasion for females) (*7*).

The findings in this report are subject to at least three limitations. First, the 25 media markets might not be broadly representative of the United States, although they are likely to represent major metropolitan areas. Second, this study is limited by its focus on national television advertisements delivered through broadcast or cable delivery and does not assess potential exposure to alcohol advertising on streamed television programming delivered through the Internet. Finally, youth exposure to alcohol advertising was assessed using a sample of 40 television programs with alcohol advertising that were also known to have the largest youth audiences in each of the four program categories; thus, the findings are unlikely to be representative of youth exposure to alcohol advertising on all television programs. Nonetheless, these findings are likely to be representative of alcohol advertising placed on national television programs that are popular with youths in major metropolitan areas.

The results of this evaluation suggest that the alcohol industry has not consistently met its 2003 self-regulatory standards to avoid airing alcohol advertising during programs where >30% of the audience is underage, and that industry marketing codes would benefit from the use of local as well as national data on the age distribution and television use of viewing audiences. In 1999, the Federal Trade Commission also recommended that the industry develop "no-buy" lists barring alcohol advertising on television programs and in other media that are likely to have disproportionately large underage audiences (*8*). Strategies recommended by the U.S. Community Preventive Services Task Force to reduce excessive alcohol use include increasing alcohol excise taxes and regulating alcohol outlet density (*9*). Continued public health surveillance of youth exposure to alcohol advertising allows for the ongoing monitoring of compliance with marketing standards, and can help inform the planning, implementation, and evaluation of interventions to further reduce youth exposure to alcohol marketing.

What is already known on this topic?

Youth exposure to alcohol advertising is associated with the initiation of alcohol use and higher levels of consumption among youths who drink. The alcohol industry uses voluntary advertising codes based on youth audience composition to guide the placement of alcohol advertising, but compliance with these voluntary codes has not been evaluated at the local level.

What is added by this report?

In 25 of the largest television markets in the United States, approximately one in four alcohol advertisements on a sample of 40 national TV programs popular with youths had underage audiences >30%, exceeding the alcohol industry's voluntary 2003 self-regulatory codes.

What are the implications for public health practice?

If the alcohol advertising on the popular national television programs in the 25 largest television markets where >30% of the local audience was underage were eliminated and not replaced, total youth exposure to alcohol advertising on these programs could drop by as much as one third. Continued public health surveillance of youth exposure to alcohol advertising will allow for the ongoing assessment of compliance with marketing codes and can help inform the planning, implementation, and evaluation of interventions to further reduce youth exposure to alcohol marketing.

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Vital Signs: Colorectal Cancer Screening Test Use — United States, 2012

On November 5, 2013, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Abstract

Background: Strong evidence exists that screening with fecal occult blood testing (FOBT), sigmoidoscopy, or colonoscopy reduces the number of deaths from colorectal cancer (CRC). The percentage of the population up-to-date with recommended CRC screening increased from 54% in 2002 to 65% in 2010, primarily through increased use of colonoscopy.

Methods: Data from the 2012 Behavioral Risk Factor Surveillance System survey were analyzed to estimate percentages of adults aged 50–75 years who reported CRC screening participation consistent with United States Preventive Services Task Force recommendations.

Results: In 2012, 65.1% of U.S. adults were up-to-date with CRC screening, and 27.7% had never been screened. The proportion of respondents who had never been screened was greater among those without insurance (55.0%) and without a regular care provider (61.0%) than among those with health insurance (24.0%) and a regular care provider (23.5%). Colonoscopy was the most commonly used screening test (61.7%), followed by FOBT (10.4%). Colonoscopy was used by more than 53% of the population in every state. The percentages of blacks and whites up-to-date with CRC screening were equivalent. Compared with whites, a higher percentage of blacks across all income and education levels used FOBT.

Conclusions: Many age-eligible adults did not use any type of CRC screening test as recommended. Organized, population-based approaches might increase CRC screening among those who have never been screened. Promoting both FOBT and colonoscopy as viable screening test options might increase CRC screening rates and reduce health disparities.

Introduction

Colorectal cancer (CRC) is the second most common cause of cancer death among cancers that affect both men and women (*1*). Strong evidence exists that screening for CRC reduces the incidence and mortality of the disease (*2*). Approximately 90% of those diagnosed with early stage cancer live 5 or more years (*3*). Screening with either a fecal occult blood test (FOBT) or sigmoidoscopy has been shown in randomized controlled trials to decrease CRC mortality (*2*). Currently, no randomized controlled trials demonstrate the efficacy of colonoscopy; however, observational studies have reported a reduction in CRC incidence (*2*). The United States Preventive Services Task Force (USPSTF) recommends several tests for the prevention or early detection of CRC among adults ages 50–75 years: 1) high-sensitivity FOBT annually, 2) colonoscopy every 10 years, or 3) sigmoidoscopy every 5 years with FOBT every 3 years (*4*).

The percentage of the U.S. adult population that is up-to-date with recommended CRC screening increased from 54% in 2002 to 65% in 2010, primarily driven by increased use of colonoscopy (*5*). Use of FOBT and sigmoidoscopy declined steadily over the same period (*5*). This report describes current CRC screening test use by state and type of test, using data from the 2012 Behavioral Risk Factor Surveillance System (BRFSS) survey.

Methods

BRFSS is an annual, state-based, random-digit-dialed telephone survey of the civilian, noninstitutionalized adult population aged ≥18 years that collects information on health risk behaviors, preventive health practices, and health-care access in the United States. Survey data were available for all 50 states and the District of Columbia (DC). The median combined response rate for the 2012 BRFSS survey was 45.2%.

BRFSS respondents aged ≥50 years were asked whether they had ever used "a special kit at home to determine whether the stool contains blood (FOBT)," whether they had ever had a "tube inserted in the rectum to view the colon for signs of cancer or other health problems (sigmoidoscopy or colonoscopy)," and if so, whether their "most recent exam was a sigmoidoscopy or a colonoscopy" and when these tests were last performed. In accordance with current USPSTF guidelines for CRC screening, the percentages of adults aged 50–75 years who reported

having had a FOBT within the past year, colonoscopy within the previous 10 years, or sigmoidoscopy within the previous 5 years and FOBT within the previous 3 years were estimated as in previous reports (*6*). Of 236,565 respondents aged 50–75 years, a total of 15,985 (6.8%) who declined to answer, had a missing answer, or who answered "don't know/not sure" were excluded from the analysis. Screening status (up-to-date with CRC screening, screened but not up-to-date, and never screened) was analyzed by demographic variables. The composite measure (up-to-date with CRC screening), use of colonoscopy, and use of FOBT were examined by demographic variables and by state; because of small numbers, data were not presented for sigmoidoscopy in combination with FOBT. Data were weighted to the age, sex, and racial/ethnic distribution of each state's adult population using intercensal estimates that were age standardized to the 2012 BRFSS population.

Results

In 2012, 65.1% of respondents reported they were up to date with one of the CRC screening tests recommended by the USPSTF (Table 1). Of respondents, 7.2% had been screened, but were not up-to-date, and 27.7% reported they had never been screened. The percentages of blacks and whites who reported being up-to-date with CRC screening were essentially equivalent and greater than those for other races. The percentages that had never been screened were highest for ages 50–64 years, men, Hispanics, American Indian/Alaska Natives and those who live in non-metropolitan areas. As education level and annual household income increased, the proportion of respondents who had never been screened decreased. The proportion of respondents who had never been screened was greater among those without insurance (55.0%) and without a regular care provider (61.0%) than among those with health insurance (24.0%) and a regular care provider (23.5%).

Among respondents who were up-to-date with CRC screening, colonoscopy was the most commonly used test (61.7%), followed by FOBT (10.4%), and sigmoidoscopy in combination with FOBT (0.7%) (Table 2). The percentage reporting use of either FOBT or colonoscopy increased with age and was greater among those with health insurance and those with a regular health-care provider. Compared with other racial groups, a greater percentage of whites (62.7%) and blacks (62.1%) reported colonoscopy within 10 years, and a greater percentage of Asian/Pacific Islanders (14.5%) and blacks (12.6%) reported FOBT within 1 year. Minimal variation in reported FOBT use by education level and household income was observed, whereas the percentage of respondents reporting colonoscopy within the last 10 years increased with greater education level and annual household income. Among blacks and whites, a greater percentage of blacks reported receiving an FOBT within 1 year regardless of income or education level (Figure).

The percentage of respondents who were up-to-date with CRC screening was highest in Massachusetts (76.3%) and lowest in Arkansas (55.7%) and Wyoming (55.9%) (Table 3). In every state, at least 53% of respondents reported receiving colonoscopy within 10 years. California had the highest percentage of respondents who reported FOBT within 1 year (20.2%) and Utah had the lowest percentage (3.4%). The percentage of respondents in any state reporting receiving sigmoidoscopy within 5 years and FOBT within 3 years was ≤3%.

Discussion

Approximately two-thirds of the U.S. population aged 50–75 years were up-to-date with CRC screening in 2012. Previous studies suggest CRC screening rates are increasing less rapidly than in the past (*6*). By far the most commonly used CRC screening test was colonoscopy. Colonoscopy use was similar for whites and blacks, but varied by education and household income. A much smaller percentage of eligible adults used FOBT. FOBT use was similar by education and household income overall, but a greater percentage of blacks across all education and income levels reported use of FOBT. The percentage of the eligible population that used sigmoidoscopy with FOBT was extremely low. States with higher screening rates had higher use of FOBT and/or colonoscopy, with considerable variation by state.

Although no CRC screening strategy has been shown to be superior when the risk and benefits of each test are considered (*2*), this study found that colonoscopy is the predominant method for CRC screening in the United States. Primary-care providers are the most common source for a CRC screening recommendation. Many providers believe that colonoscopy is the best test option and do not offer other screening tests to their patients (*7*–*8*). Colonoscopy can detect and remove precancerous polyps during the procedure, but it is an invasive procedure and requires significant patient preparation and time commitment.

This study showed FOBT was infrequently used. Most primary-care physicians still offer FOBT (although sometimes an older, less-sensitive guaiac FOBT) to their patients at least some of the time, although most report thinking that FOBT is only somewhat effective in reducing CRC mortality (*9*). Newer tests, such as the high-sensitivity guaiac FOBT and high-sensitivity fecal immunochemical test (FIT) are recommended for CRC screening in current guidelines (*4*). FOBT is relatively inexpensive, easy to use, and widely available, but requires more frequent repeat testing with prompt subsequent colonoscopy in all those with a positive test. This study found that use of FOBT and colonoscopy varied by demographic

TABLE 1. Percentage of respondents age 50–75 years who reported colorectal cancer (CRC) screening test use, by screening status and selected characterereristics — Behavioral Risk Factor Surveillance System (BRFSS), United States, 2012*

	Up-to-date with CRC screening†		Screened but not up-to-date		Never screened	
Characteristic	**%**	**(95% CI)**	**%**	**(95% CI)**	**%**	**(95% CI)**
Overall	**65.1**	**(64.7–65.5)**	**7.2**	**(7.0–7.5)**	**27.7**	**(27.3–28.1)**
Age (yrs)						
50–64	60.0	(59.5–60.5)	7.0	(6.7–7.3)	33.0	(32.5–33.5)
65–75	76.8	(76.2–77.4)	7.8	(7.5–8.1)	15.4	(14.8–15.9)
Sex						
Men	63.9	(63.2–64.5)	6.5	(6.2–6.9)	29.6	(29.0–30.2)
Women	66.2	(65.7–66.8)	7.9	(7.6–8.2)	25.9	(25.4–26.4)
Race						
White	65.9	(65.4–66.3)	7.5	(7.2–7.7)	26.7	(26.3–27.1)
Black	65.5	(64.2–66.9)	5.9	(5.3–6.6)	28.5	(27.2–29.9)
Asian/Pacific Islander	63.2	(58.9–67.2)	6.6	(4.7–9.3)	30.2	(26.4–34.3)
American Indian/Alaska Native	54.5	(50.8–58.2)	6.2	(4.9–7.7)	39.3	(35.6–43.1)
Other/Multiracial	51.2	(47.7–54.7)	6.0	(4.7–7.6)	42.9	(39.4–46.4)
Ethnicity						
Hispanic	53.1	(51.1–55.1)	5.9	(4.9–6.9)	41.0	(39.0–43.1)
Non-Hispanic	66.4	(66.0–66.8)	7.4	(7.2–7.6)	26.3	(25.9–26.6)
Education						
Less than high school graduate	48.3	(46.7–49.8)	6.6	(5.9–7.4)	45.1	(43.6–46.6)
High school graduate/GED	61.7	(60.9–62.4)	7.1	(6.7–7.4)	31.3	(30.5–32.0)
Some college/Technical school	67.8	(67.1–68.6)	7.8	(7.4–8.2)	24.4	(23.7–25.1)
College graduate	73.5	(72.8–74.1)	7.1	(6.8–7.5)	19.4	(18.8–20.0)
Annual household income ($)						
<15,000	49.5	(48.0–50.9)	8.0	(7.3–8.8)	42.5	(41.0–44.0)
15,000–34,999	57.1	(56.2–58.1)	8.2	(7.7–8.7)	34.7	(33.8–35.6)
35,000 –49,999	66.4	(65.3–67.5)	7.2	(6.7–7.8)	26.4	(25.4–27.5)
50,000–74,999	70.4	(69.4–71.4)	6.8	(6.3–7.3)	22.9	(21.9–23.8)
≥75,000	74.0	(73.3–74.7)	6.4	(6.0–6.9)	19.5	(18.9–20.2)
Residence location§						
Metropolitan	68.7	(68.1–69.3)	7.4	(7.0–7.7)	23.9	(23.3–24.5)
Non-metropolitan	64.8	(64.1–65.4)	7.3	(7.0–7.6)	28.0	(27.4–28.5)
Health insurance status						
Yes	68.9	(68.5–69.4)	7.1	(6.8–7.3)	24.0	(23.6–24.4)
No	36.9	(34.9–39.0)	8.0	(7.3–8.9)	55.0	(52.9–57.1)
Regular health-care provider status						
Yes	69.3	(68.9–69.8)	7.1	(6.9–7.4)	23.5	(23.1–23.9)
No	30.7	(29.3–32.0)	8.4	(7.7–9.1)	61.0	(59.5–62.4)

Abbreviations: CRC = colorectal cancer; CI = confidence interval; GED = general equivalency diploma.

* Data were weighted to the age, sex, and racial/ethnic distribution of each state's adult population using intercensal estimates and were age-standardized to the 2012 BRFSS population.

† Fecal occult blood test (FOBT) within 1 year, or sigmoidoscopy within 5 years with FOBT within 3 years, or colonoscopy within 10 years.

§ Metropolitan is defined as in the center city of a metropolitan statistical area (MSA) or outside the center city of an MSA but not inside the county containing the center city. Non-metropolitian is defined as inside a suburban county of the MSA, in an MSA that has no center city, or not in an MSA.

characteristics and by state. This variation might be attributed to patient preferences, provider preferences, or other factors such as physician reimbursement policies and availability of certain tests. Patients have strong preferences for particular CRC screening tests, but many, particularly those in minority populations, would choose FOBT when provided with objective information about test options (*10–12*). Evidence also indicates that patients choosing FOBT are more likely to complete the test than those who choose colonoscopy (*10,13*).

The potential to increase screening rates exists if health-care providers identify the test that their patient is most likely to complete and consistently offer all recommended screening tests. This study found that most states with higher overall CRC screening percentages also had relatively higher use of FOBT and colonoscopy, although FOBT use was much lower than would be expected based on studies of patient preference and subsequent adherence (*10–12*). The study also found that blacks and whites have approximately the same screening rates, but a higher percentage of blacks across all income and education levels used FOBT.

A substantial percentage of persons who were without insurance or did not have a regular health-care provider had not been screened for CRC, and were unlikely to have had regular contact with the health care system. Although the Affordable

TABLE 2. Percentage of respondents aged 50–75 years who reported colorectal cancer (CRC) screening test use, by test type and selected characteristics — Behavioral Risk Factor Surveillance System (BRFSS), United States, 2012*

Characteristic	Up-to-date with CRC screening†		Colonoscopy within 10 years		FOBT within 1 year	
	%	(95% CI)	%	(95% CI)	%	(95% CI)
Overall	**65.1**	**(64.7–65.5)**	**61.7**	**(61.2–62.1)**	**10.4**	**(10.1–10.6)**
Age (yrs)						
50–64	60.0	(59.5–60.5)	56.4	(55.8–56.9)	8.9	(8.6–9.3)
65–75	76.8	(76.2–77.4)	73.9	(73.2–74.5)	13.6	(13.1–14.2)
Sex						
Men	63.9	(63.2–64.5)	60.5	(59.8–61.1)	10.6	(10.2–11.0)
Women	66.2	(65.7–66.8)	62.8	(62.2–63.3)	10.2	(9.8–10.5)
Race						
White	65.9	(65.4–66.3)	62.7	(62.3–63.1)	10.0	(9.7–10.2)
Black	65.5	(64.2–66.9)	62.1	(60.6–63.5)	12.6	(11.6–13.7)
Asian/Pacific Islander	63.2	(58.9–67.2)	54.6	(50.0–59.1)	14.5	(11.5–18.0)
American Indian/Alaska Native	54.5	(50.8–58.2)	49.5	(45.8–53.3)	11.3	(9.2–13.9)
Other/Multiracial	51.2	(47.7–54.7)	49.1	(45.6–52.6)	6.9	(5.6–8.5)
Ethnicity						
Hispanic	53.1	(51.1–55.1)	48.4	(46.4–50.5)	10.2	(9.0–11.5)
Non-Hispanic	66.4	(66.0–66.8)	63.1	(62.7–63.5)	10.4	(10.1–10.6)
Education level						
Less than a high school graduate	48.3	(46.7–49.8)	44.7	(43.2–46.2)	8.4	(7.7–9.3)
High school graduate/GED	61.7	(60.9–62.4)	58.2	(57.4–59.0)	9.9	(9.5–10.4)
Some college/Technical school	67.8	(67.1–68.6)	64.2	(63.4–65.0)	11.1	(10.6–11.7)
College graduate	73.5	(72.8–74.1)	70.5	(69.8–71.2)	10.9	(10.5–11.4)
Annual household income ($)						
<15,000	49.5	(48.0–50.9)	45.0	(43.5–46.4)	10.2	(9.4–11.1)
15,000–34,999	57.1	(56.2–58.1)	53.1	(52.2–54.1)	10.4	(9.8–11.0)
35,000–49,999	66.4	(65.3–67.5)	63.1	(62.0–64.2)	10.5	(9.8–11.3)
50,000–74,999	70.4	(69.4–71.4)	66.8	(65.8–67.9)	10.8	(10.1–11.6)
≥75,000	74.0	(73.3–74.7)	71.3	(70.6–72.1)	10.5	(9.9–11.0)
Residence location§						
Metropolitan	68.7	(68.1-69.3)	64.9	(64.2–65.5)	11.7	(11.3–12.2)
Non-metropolitan	64.8	(64.1-65.4)	62.2	(61.5–62.8)	8.9	(8.5–9.2)
Health insurance status						
Yes	68.9	(68.5–69.4)	65.5	(65.1–66.0)	10.9	(10.6–11.2)
No	36.9	(34.9–39.0)	33.1	(31.2–35.2)	7.0	(6.0–8.1)
Regular health-care provider status						
Yes	69.3	(68.9–69.8)	65.9	(65.4–66.3)	11.1	(10.8–11.4)
No	30.7	(29.3–32.0)	28.0	(26.7–29.3)	4.6	(4.0–5.2)

Abbreviations: CI = confidence interval; FOBT = fecal occult blood test; GED = general equivalency diploma.

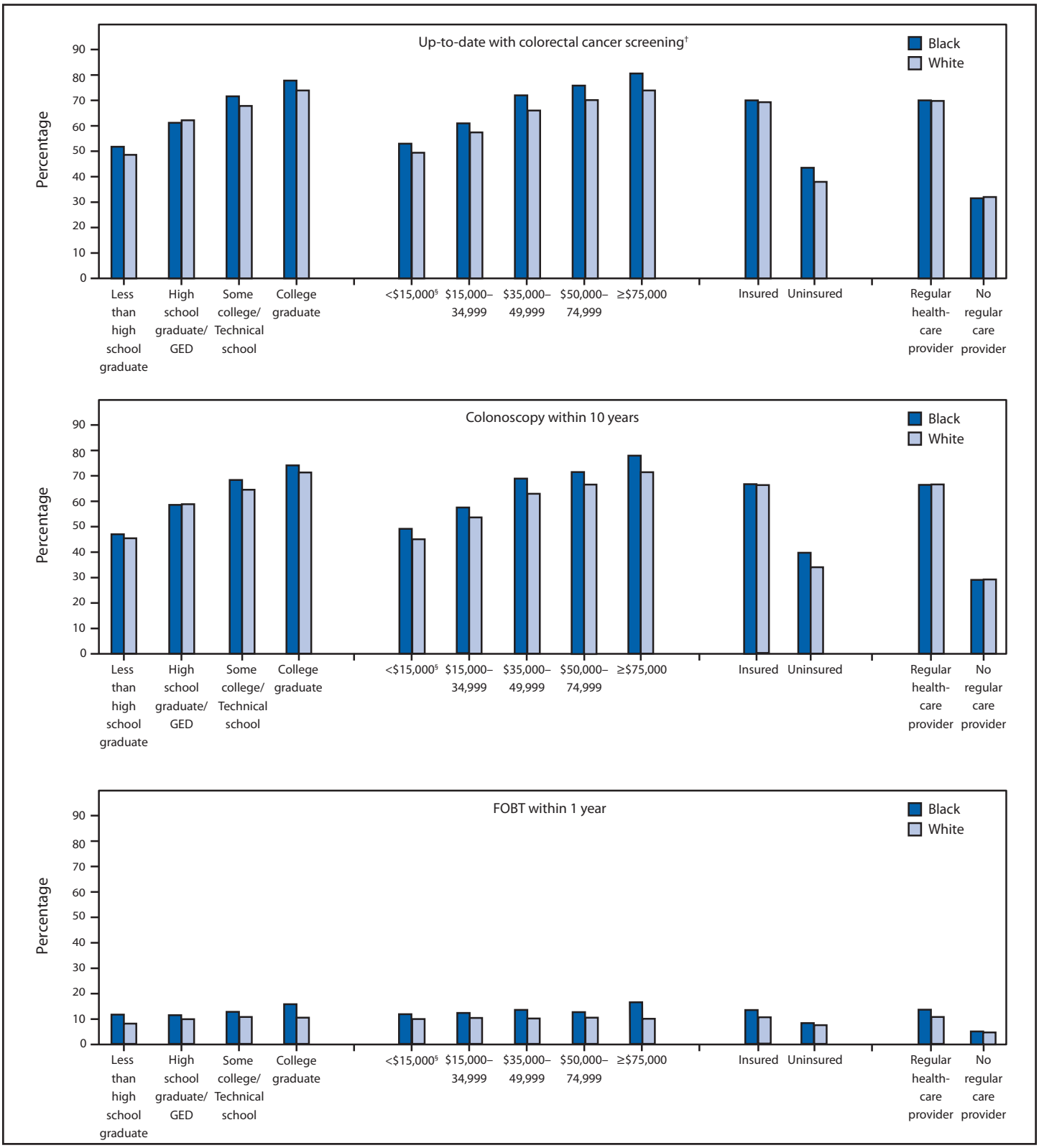
* Data were weighted to the age, sex, and racial/ethnic distribution of each state's adult population using intercensal estimates and were age-standardized to the 2012 BRFSS population.

† FOBT within 1 year, or sigmoidoscopy within 5 years with FOBT within 3 years, or colonoscopy within 10 years.

§ Metropolitan is defined as in the center city of a metropolitan statistical area (MSA) or outside the center city of an MSA but not inside the county containing the center city. Non-metropolitian is defined as inside a suburban county of the MSA, in an MSA that has no center city, or not in an MSA.

Care Act will help address these barriers by providing coverage for CRC screening tests without additional costs, the traditional reliance on primary-care settings to promote and provide cancer screenings will only reach those who have regular contact with the health-care system (*13*). Additional analyses showed that among those who had never been screened, 76% actually had health insurance, so additional interventions are needed even among those with access to health care. Organized screening systems identify eligible populations, reach out to persons in their homes or community settings, and carefully monitor adherence and follow-up of abnormal tests. Such approaches have been widely applied to other clinical preventive services, such as immunization and screening for sexually transmitted diseases, and have been successful in substantially increasing CRC screening in several settings (*13*–*16*). A recent randomized controlled trial of uninsured patients who were not up-to-date with CRC screening demonstrated that mailings to patients identified as eligible for screening substantially increased CRC screening participation, with significantly higher screening rates among those sent a FIT test kit than among those offered colonoscopy (*13*). To accelerate progress in increasing CRC screening, public health agencies might consider supporting organized screening approaches by developing population-level interventions to improve cancer

FIGURE. Percentage of black and white respondents aged 50–75 years who reported colorectal cancer screening test use, by test type and selected characteristics — Behavioral Risk Factor Surveillance System (BRFSS), United States, 2012*



Abbreviations: FOBT = fecal occult blood test; GED = general equivalency diploma.

* Data were weighted to the age, sex, and racial/ethnic distribution of each state's adult population using intercensal estimates and were age-standardized to the 2012 BRFSS population.

† FOBT within 1 year, or sigmoidoscopy within 5 years with FOBT within 3 years, or colonoscopy within 10 years.

§ Annual household income.

TABLE 3. Percentage of respondents aged 50–75 years who reported colorectal cancer (CRC)screening test use, by test type and by state ranked by percentage who were up-to-date with CRC screening — Behavioral Risk Factor Surveillance System, United States, 2012*

State	Up–to–date with CRC screening†		Colonoscopy within 10 years		FOBT within 1 year	
	%	(95% CI)	%	(95% CI)	%	(95% CI)
Overall	**65.1**	**(64.7–65.5)**	**61.7**	**(61.2–62.1)**	**10.4**	**(10.1–10.6)**
Highest tertile						
Massachusetts	76.3	(74.9–77.6)	73.7	(72.3–75.1)	9.9	(9.0–10.8)
New Hampshire	75.3	(73.4–77.0)	73.6	(71.7–75.4)	7.8	(6.8–8.8)
Maine	73.1	(71.6–74.6)	71.1	(69.6–72.6)	8.4	(7.6–9.3)
Rhode Island	72.7	(70.5–74.9)	71.0	(68.7–73.1)	8.1	(6.9–9.4)
Connecticut	72.1	(70.1–74.0)	69.9	(67.9–71.8)	10.4	(9.3–11.7)
Vermont	71.4	(69.4–73.3)	69.5	(67.5–71.5)	7.8	(6.8–9.0)
Delaware	71.2	(68.6–73.6)	70.0	(67.4–72.5)	7.1	(6.0–8.4)
Wisconsin	71.2	(68.4–73.7)	69.1	(66.4–71.7)	6.3	(5.1–7.6)
Minnesota	70.6	(69.0–72.1)	69.5	(67.9–71.1)	4.7	(4.1–5.4)
Maryland	70.4	(68.6–72.2)	68.1	(66.2–69.9)	11.4	(10.3–12.6)
New York	69.4	(66.8–71.9)	67.0	(64.3–69.6)	8.2	(6.9–9.8)
Michigan	69.0	(67.3–70.7)	67.4	(65.7–69.1)	9.4	(8.4–10.4)
North Carolina	68.2	(66.5–69.8)	65.1	(63.4–66.7)	11.0	(10.0–12.1)
Virginia	68.0	(66.0–69.9)	65.8	(63.8–67.8)	9.5	(8.4–10.7)
Utah	68.0	(66.3–69.6)	67.1	(65.4–68.7)	3.4	(2.9–4.1)
Georgia	67.2	(64.9–69.5)	64.4	(62.1–66.7)	11.8	(10.3–13.4)
California	67.1	(65.2–68.8)	57.3	(55.3–59.2)	20.2	(18.8–21.8)
Middle tertile						
Washington	66.8	(65.4–68.2)	63.8	(62.4–65.3)	10.1	(9.3–10.9)
District of Columbia	66.7	(62.9–70.3)	63.4	(59.6–67.0)	14.1	(12.1–16.3)
Pennsylvania	66.5	(65.1–68.0)	63.6	(62.1–65.1)	9.0	(8.1–9.9)
Iowa	65.9	(64.0–67.7)	63.9	(62.0–65.7)	8.6	(7.6–9.7)
Colorado	65.4	(63.8–66.9)	61.3	(59.7–62.9)	10.1	(9.1–11.2)
Alabama	64.9	(63.0–66.8)	62.4	(60.4–64.3)	9.5	(8.5–10.6)
Oregon	64.7	(62.3–67.0)	61.3	(58.8–63.7)	9.8	(8.4–11.4)
Kansas	64.6	(63.0–66.1)	61.4	(59.8–62.9)	10.7	(9.8–11.8)
Tennessee	64.3§	(62.1–66.5)	62.2	(59.9–64.3)	10.2	(9.0–11.5)
Florida	64.2	(61.8–66.5)	60.9	(58.4–63.3)	12.5	(11.0–14.1)
South Carolina	64.2	(62.4–65.9)	62.6	(60.8–64.4)	6.9	(6.2–7.8)
Hawaii	64.1	(61.6–66.6)	56.5	(53.8–59.1)	14.6	(12.9–16.4)
Missouri	64.0	(61.6–66.3)	61.0	(58.5–63.4)	7.6	(6.5–8.9)
Ohio	63.3	(61.7–64.9)	59.7	(58.0–61.3)	9.2	(8.3–10.2)
Kentucky	62.9	(61.0–64.8)	60.2	(58.2–62.1)	8.6	(7.6–9.8)
West Virginia	62.7	(60.6–64.8)	59.0	(56.8–61.1)	12.7	(11.4–14.1)
New Jersey	62.4	(60.6–64.0)	60.1	(58.3–61.8)	7.8	(7.0–8.7)
Lowest tertile						
South Dakota	62.3	(59.6–65.0)	59.8	(57.0–62.5)	8.5	(7.1–10.1)
Illinois	61.3	(58.8–63.8)	59.4	(56.9–61.9)	6.0	(5.0–7.2)
Nebraska	60.9	(59.5–62.3)	58.2	(56.8–59.7)	7.3	(6.6–8.1)
Indiana	60.2	(58.2–62.0)	57.3	(55.4–59.2)	8.8	(7.8–10.0)
Idaho	59.8	(56.8–62.6)	58.0	(55.1–60.8)	7.2	(5.9–8.7)
Louisiana	59.8	(57.7–61.9)	56.2	(54.1–58.3)	10.7	(9.5–12.1)
Texas	58.5	(56.3–60.7)	55.7	(53.5–57.9)	8.6	(7.4–10.0)
Oklahoma	58.3	(56.4–60.1)	55.1	(53.2–57.0)	8.0	(7.0–9.0)
Arizona	58.0	(55.2–60.6)	55.2	(52.5–57.9)	9.4	(8.0–11.0)
Mississippi	58.0	(56.0–60.0)	55.0	(53.0–57.1)	11.1	(9.9–12.4)
Nevada	58.0	(54.8–61.3)	54.4	(51.1–57.6)	11.4	(9.5–13.7)
North Dakota	57.9	(55.5–60.4)	54.9	(52.5–57.4)	8.1	(6.9–9.5)
Alaska	57.6	(54.6–60.7)	54.8	(51.7–57.9)	7.3	(5.8–9.2)
New Mexico	57.5	(55.6–59.3)	54.4	(52.5–56.2)	8.6	(7.5–9.7)
Montana	56.2	(54.3–58.1)	53.4	(51.4–55.3)	6.5	(5.6–7.5)
Wyoming	55.9	(53.3–58.4)	53.7	(51.1–56.2)	5.4	(4.4–6.5)
Arkansas	55.7	(53.2–58.2)	53.4	(50.8–55.9)	8.3	(7.0–9.8)

Abbreviations: CI = confidence interval; FOBT = fecal occult blood test.

* Data were weighted to the age, sex, and racial/ethnic distribution of each state's adult population using intercensal estimates and were age–standardized to the 2012 BRFSS population.

† FOBT within 1 year, or sigmoidoscopy within 5 years with FOBT within 3 years, or colonoscopy within 10 years.

§ Median.

Key Points

- About 1 in 3 adults aged 50–75 years have not been screened for colorectal cancer according to national guidelines.
- Of adults who have been screened, colonoscopy is the most commonly used colorectal cancer screening test. Only 1 in 10 screened adults have used fecal occult blood tests (FOBT).
- Blacks and whites had equivalent colorectal cancer screening rates. Compared with whites, a higher percentage of blacks across all income and education levels used FOBT.
- To increase use of colorectal cancer screening tests, state and local public health can 1) work with existing programs, doctors and public health professionals who have already greatly increased colorectal cancer screening rates; 2) develop record systems to track and explore ways to increase screening rates; 3) promote all three testing options to key audiences; 4) use public health workers and patient navigators in communities with low testing rates; and 5) work with state Medicaid programs, primary-care associations, and Medicare quality improvement organizations.
- Additional information is available at http://www.cdc.gov/vitalsigns.

screening across communities, and using communication and outreach in communities with low CRC screening rates (*17*).

The findings in this report are subject to at least four limitations. First, CRC screening rates might be overestimated or underestimated because BRFSS does not specify whether testing was done for screening or diagnosis. Second, data are self-reported and not validated by medical records review. Third, response rates were low (45.2%), although the BRFSS weighting procedure corrects for nonresponse, and 6.8% of respondents did not answer all the questions and were excluded. Finally, in 2011, the sampling frame for BRFSS expanded to include cellular telephones, resulting in changes to the weighting of BRFSS data (*18*). Therefore, data collected before 2011 cannot be compared with or presented in trend analysis with data collected in 2011 or subsequent years.

In the U.S. population, 65.1% of adults are currently up-to-date with CRC screening recommendations based on self-reported BRFSS survey data. Progress to date has been driven almost exclusively by use of colonoscopy, which was used by more than half of the population in every state. Compared with whites, a higher percentage of blacks across all income and education levels used FOBT. CDC's Colorectal Cancer Control Program has set a goal of increasing the CRC screening rate to 80% by 2014. To achieve this goal, aggressive approaches will be needed, including more consistent promotion of both FOBT and colonoscopy as viable screening options and development of organized, population-based strategies that extend CRC screening efforts to settings beyond the medical provider's office.

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Announcements

World Pneumonia Day — November 12, 2013

Every 20 seconds, somewhere in the world, a child dies from pneumonia (*1*). Many of these deaths are preventable through appropriate treatment and vaccination. With support from the GAVI Alliance, notable progress has been made in preventing pneumonia deaths and hospitalizations resulting from *Streptococcus pneumoniae* (pneumococcus) and *Haemophilus influenzae* type b (Hib) infections (*2,3*).

In spring 2013, the World Health Organization and the United Nations Children's Fund (UNICEF) released the Global Action Plan for Pneumonia and Diarrhoea, which promotes pneumococcal conjugate vaccine use as an important strategy for achieving United Nations Millennium Development Goal 4 to reduce child mortality (*4*). Hib conjugate vaccine also is becoming a part of global routine infant immunization, and recent data show its effectiveness at preventing pneumonia in developing countries (*2,4*).

In spite of this progress, many gaps remain. Respiratory viruses, such as respiratory syncytial virus, influenza, and measles, also are major causes of pneumonia globally. Expanded use of influenza and measles vaccines, antiviral medications, and supportive health care can reduce the burden of pneumonia caused by these viruses. Additional research on diagnostics, prevention, and treatment of viral-associated pneumonia also is needed.

World Pneumonia Day is being observed November 12, 2013, to raise awareness about pneumonia's toll and to promote interventions to protect against, treat, and prevent the disease globally. Activities are being promoted by a coalition of more than 140 community-based organizations, academic institutions, government agencies, and foundations. More information is available at http://worldpneumoniaday.org.

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Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV-Exposed and HIV-Infected Children Now Online

The *Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV-Exposed and HIV-Infected Children* are now available on the AIDSinfo website (http://aidsinfo.nih.gov/contentfiles/lvguidelines/oi_guidelines_pediatrics.pdf). These guidelines update the last version of the guidelines published in 2009. They are intended for use by clinicians and health care workers providing medical care for human immunodeficiency virus (HIV)-exposed and HIV-infected children in the United States.

The guidelines include a discussion of opportunistic pathogens that occur in the United States and ones that might be acquired during international travel, such as malaria. The section for each opportunistic infection (OI) includes a brief description of the epidemiology, clinical presentation, and diagnosis of the OI in children; prevention of exposure; prevention of first episode of disease; discontinuation of primary prophylaxis after immune reconstitution; treatment of disease; monitoring for adverse effects during treatment, including immune reconstitution inflammatory syndrome (IRIS); management of treatment failure; prevention of disease recurrence; and discontinuation of secondary prophylaxis after immune reconstitution. Recommendations are rated using a system that indicates the strength of each recommendation and the quality of evidence supporting it.

Major changes in the guidelines include 1) greater emphasis on the importance of antiretroviral therapy (ART) for preventing and treating OIs, especially those OIs for which no specific therapy exists; 2) increased information about the diagnosis and management of IRIS; 3) additional information about managing ART in children with OIs, including potential drug–drug interactions; 4) updated immunization recommendations for HIV-exposed and HIV-infected children, including pneumococcal, human papillomavirus, meningococcal, and rotavirus vaccines; 5) addition of sections on influenza, giardiasis, and isosporiasis; 6) elimination of sections on aspergillosis, bartonellosis, and human herpes virus (HHV-6 and HHV-7) infections; and 7) updated recommendations on discontinuation of OI prophylaxis after immune reconstitution in children.

Announcements

Recommendation Regarding Clinical Decision-Support Systems in Cardiovascular Disease Prevention and Control

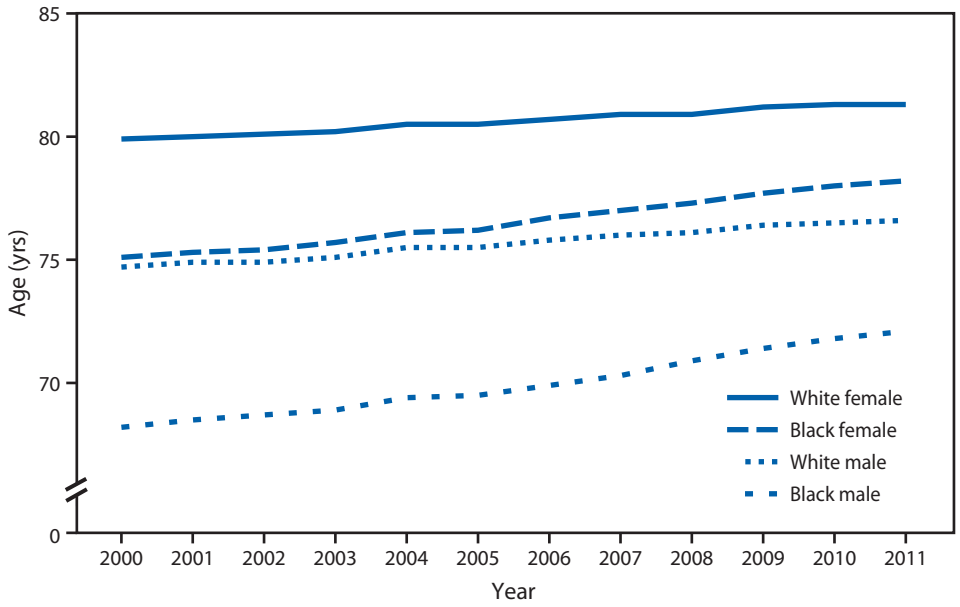
The Community Preventive Services Task Force recently posted new information on its website: "Cardiovascular Disease Prevention and Control: Clinical Decision-Support Systems." The information is available at http://www.thecommunityguide.org/cvd/cdss.html.

Established in 1996 by the U.S. Department of Health and Human Services, the task force is an independent, nonfederal, uncompensated panel of public health and prevention experts whose members are appointed by the Director of CDC. The task force provides information for a wide range of decision makers on programs, services, and policies aimed at improving population health. Although CDC provides administrative, research, and technical support for the task force, the recommendations developed are those of the task force and do not undergo review or approval by CDC.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Life Expectancy at Birth, by Sex and Black or White Race — National Vital Statistics System, United States, 2000–2011*



* Data for 2011 are preliminary.

In 2011, life expectancy at birth for the overall U.S. population was 78.7 years. From 2000 to 2011, gains in life expectancy varied by race and sex, with the largest increase (5.7%) among black males, to 72.1 years. Life expectancy increased 4.1% among black females, to 78.2 years; 2.5% among white males, to 76.6 years; and 1.8% among white females, to 81.3 years.

Sources: Hoyert DL, Xu J. Deaths: preliminary data for 2011. Nat Vital Stat Rep 2012;61(6).

Murphy SL, Xu J, Kochanek KD. Deaths: final data for 2010. Nat Vital Stat Rep 2013;61(4).

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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.

Data presented by the Notifiable Disease Data Team and 122 Cities Mortality Data Team in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333 or to *mmwrq@cdc.gov.*

U.S. Government Printing Office: 2013-623-030/01031 Region IV ISSN: 0149-2195