Published in final edited form as:

J Community Health. 2015 August ; 40(4): 769–779. doi:10.1007/s10900-015-9998-z.

Colorectal Cancer Screening in U.S. Seniors ages 76-84 Years

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Abstract

The U.S. Preventive Services Task Force recommends patient-physician discussions about the appropriateness of colorectal cancer (CRC) screening among adults ages 76-84 years who have never been screened. In this study, we used data from the 2010 National Health Interview Survey to examine patterns of CRC screening and provider recommendation among seniors ages 76-84 years, and made some comparisons to younger adults. Nationally-representative samples of 1379 adults ages 76-84 years and 8797 adults ages 50-75 years responded to questions about CRC screening status, receipt of provider recommendation, and discussion of test options; 22.7% (95% CI: 20.1-25.3) of seniors ages 76-84 had never been tested for CRC and therefore were not up-to-date with guidelines; 3.9% (95% CI: 2.0-7.6) of these individuals reported a recent provider recommendation for screening. In multivariate analyses, the likelihood of never having been tested was significantly greater for seniors of other/multiple race or Hispanic ethnicity; with high school or less education; without private health insurance coverage; who had <1 doctor visit in the past year; without recent screening for breast, cervical, or prostate cancer; with no or unknown CRC family history; or with <1 chronic disease. Among the minority of respondents ages 50-75 and 76-84 reporting a provider recommendation, 73.2% indicated that the provider recommended particular tests, which was overwhelmingly colonoscopy (>89%). Nearly one-quarter of adults 76-84 have never been screened for CRC, and rates of provider recommendation in this group are very low. Greater attention to informed CRC screening discussions with screening-eligible seniors is needed.

Keywords

Cancer screening; colorectal cancer; health services research; primary care; elderly population

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INTRODUCTION

Colorectal cancer (CRC) is the third most commonly diagnosed cancer in the United States and the second leading cause of cancer deaths.¹⁻² The elderly are disproportionately affected by CRC, as incidence doubles in each succeeding decade of life between the ages of 40 and 80.³ The increasing incidence rate is important because the elderly population in the United States is growing. In 2012, more than 18 million people were ages 75 or older, representing 5.9% of the U.S. population.⁴ This cohort of seniors is expected to rapidly increase in the near future and to represent 19.3% of the population by 2030, principally because of the aging of the “baby boom” generation. At age 75 years, average life expectancy is 11.7 years, with men having a slightly shorter life expectancy (10.6 years) than women (12.5 years).⁵

Evidence has shown that CRC mortality can be reduced through screening. However, guidelines from expert groups vary in their recommendations for CRC screening in elderly individuals. The U.S. Preventive Services Task Force (USPSTF) has given its strongest (‘A’) recommendation for routine CRC screening in average-risk adults ages 50-75 years.⁶ It does not recommend screening individuals who are 85 years or older because the benefits of screening are unlikely to outweigh the harms. Although the USPSTF recommends against routine screening in individuals 76-84 years who have an adequate screening history, it also indicates that adults in this age group who have not previously been screened should be evaluated to determine whether screening is appropriate for them. The Multisociety Task Force does not place an upper age limit on its CRC screening recommendations.⁷ More recent guidelines published by the American College of Physicians recommend that clinicians cease CRC screening in adults older than 75 years and in those with a life expectancy shorter than 10 years.⁸

Primary care physicians (PCPs) have a central role in delivering CRC screening. A recommendation from a health care provider has been shown to be a powerful and consistent influence on CRC screening uptake.⁹ Guidelines state that PCPs should identify eligible patients, discuss available options with them, and facilitate successful completion of the selected screening option.⁶⁻⁸ Yet, studies have shown that preventive services, such as CRC screening, are not always provided efficiently and effectively in primary care. For example, both underuse and overuse of CRC screening in the elderly have been documented.¹⁰⁻¹³ Provider-related barriers to recommending CRC screening include inadequate PCP knowledge of CRC screening guidelines; lack of time, training, and/or office supports for screening discussions in busy clinical settings; emphasis of many PCPs on colonoscopy as the only screening option discussed; and lack of practice-level strategies for facilitating CRC screening, such as use of reminder systems, performance reports, electronic health records, and non-physician clinicians.¹⁴⁻¹⁷ Addressing CRC screening in elderly patients may be particularly challenging for PCPs because of the need to weigh potential harms and benefits of screening within the context of seniors’ comorbid medical conditions.¹

A sizable literature has examined CRC screening uptake among U.S. adults ages 50-75.¹⁸⁻²¹ Much less attention has been given to those ages 76-84 years. In this paper, we characterize CRC screening status among U.S. seniors ages 76-84. We also describe the extent to which unscreened adults in this age group report having received a health care provider

recommendation for CRC screening, and whether providers recommended particular tests. Where appropriate, we compare the experiences of adults in the 76-84 age group with those ages 50-75.¹⁸ Our analysis is intended to provide insights about the screening-eligible population ages 76-84 that could be used to inform strategies to facilitate patient-centered discussions about CRC screening.

METHODS

Data Source

The NHIS is an in-person, nationwide household survey of a representative sample of the U.S. civilian, non-institutionalized population, 18 years of age and older, conducted annually by the National Center for Health Statistics of the Centers for Disease Control and Prevention (CDC). The 2010 Cancer Control Supplement to the NHIS was co-sponsored by the National Cancer Institute's Division of Cancer Control and Population Sciences and CDC's Division of Cancer Prevention and Control. It asked respondents ages 40-84 about their CRC screening practices, including whether they had had sigmoidoscopy, colonoscopy, blood stool or occult blood testing (FOBT), or CT colonography/virtual colonoscopy, and if so, when and why they received the test. Brief descriptions of each test were provided. Respondents who had not had a home FOBT in the past year, sigmoidoscopy in the past five years, colonoscopy in the past ten years, or CT colonography in the past five years were asked whether, in the past 12 months, a doctor or other health professional recommended that they be tested to look for problems in their colon or rectum. Those responding "yes" were asked whether any particular tests were recommended, and which tests. Full survey instrumentation is available at: http://www.cdc.gov/nchs/nhis/nhis_questionnaires.htm. The response rate for the 2010 NHIS, taking into account household nonresponse, was 60.8%.

Measures

CRC test use—We classified respondents as being recently tested for CRC if they reported having a home FOBT in the past year, sigmoidoscopy in the past five years, colonoscopy in the past ten years, or CT colonography in the past five years. Respondents who reported having one or more CRC screening tests, but not within recommended time intervals, were classified as having been tested, but not recently. Those who had never had any of the tests were classified as never tested. We considered individuals ages 76-84 in the "never had CRC testing" group to be not up-to-date with guidelines.⁶

Provider Recommendation for CRC Screening—Receipt of provider recommendation for CRC screening in the past 12 months was categorized as yes or no.

Race/ethnicity—We categorized respondents based on their reported race into three groups: white, black, and other/multiple race. We used a separate measure of Hispanic ethnicity (yes/no).

Education—Educational attainment was based on the highest level of education achieved and categorized as bachelor's degree or more, some college or associate's degree, high school graduate, and not attaining a high school diploma.

Income—Similar to Shapiro et al.,¹⁸ we categorized respondents based on their reported annual family income as <\$35,000, \$35,000-49,999, \$50,000-74,999, and >\$75,000. Multiple imputation was used to impute missing data for income questions (<http://www.cdc.gov/nchs/nhis/2010imputedincome.htm>).

Health Insurance—We developed two categories for type of health insurance: 1) private, and 2) public only (i.e., Medicaid, Medicare, other government-sponsored insurance) or no insurance. Respondents who reported Medicare plus private supplemental insurance were included in the “private” category; those with Medicare but no supplemental insurance were assigned to the “public” category.

Physician Visits—We used three categories to measure the respondent’s number of visits to a doctor or other health professional in the past year: none, one, and two or more.

Receipt of Recent Pap Test, Mammogram, or PSA Test—Women were asked whether they had ever had a Pap test or mammogram and, if yes, when they received their most recent test. Men were asked whether they had ever received a PSA test and, if yes, how many they had received in the past five years. We created measures of recent Pap test (in the past 3 years), recent mammogram (in the past 2 years), and recent PSA test (one or more in the past 5 years), as well as a composite measure of recent receipt of one or more of these tests (yes/no/unknown).

Number of Chronic Diseases—Consistent with Han et al.²², we created a measure of the number of self-reported chronic diseases. Included conditions were hypertension, stroke, diabetes, and chronic heart, kidney, liver, and lung disease. We categorized the number of chronic diseases as none, one, two, and three or more.

Data Analysis

We used descriptive statistics to characterize respondents’ CRC screening status, whether respondents not recently or never tested had received a provider recommendation for CRC screening in the past 12 months, and the types of tests recommended. Individuals reporting a personal history of CRC (n=140) were excluded. We conducted these analyses for both the 50-75 and 76-84 age groups, so that we could compare results for respondents ages 76-84 with their younger counterparts. Among respondents ages 76-84, we examined receipt of provider recommendation in both the “not recently” and “never tested” groups—even though the former was excluded from our definition of not up-to-date with guidelines—to gain a comprehensive understanding of which seniors are receiving provider recommendations. Because the 76-84 age group had limited sample size and a very low proportion of individuals reporting a provider recommendation, we report results for the types of CRC tests recommended for the 50-75 and 76-84 age groups combined. In total, only 355 respondents in the combined age group reported a provider recommendation, and only 251 of these indicated that their health care provider had recommended particular CRC tests.

We used logistic regression modeling to examine whether particular sociodemographic, health care access, or health status characteristics were associated with “never having been

tested for CRC” among respondents ages 76-84. The dependent variable in the model was a dichotomous measure of respondents who had never been tested versus those reporting recent testing. The odds ratios estimated by this model compared the odds of being in the “never tested” group with the odds of being in the “recently tested” group.

Survey responses were weighted to reflect the probability of selection into the sample and survey non-response; the weighted data yield national estimates of the prevalence of CRC test use and receipt of provider recommendation. All analyses were conducted using SUDAAN release 10.0.1 (Research Triangle Institute, Research Triangle Park, NC).

RESULTS

Respondent Characteristics and CRC Screening Status

The sociodemographic, health care access, and health status characteristics of 1379 respondents ages 76-84 are shown in Table 1.

Among respondents ages 76-84, 64.0% (95% CI: 60.9-66.9) were recently tested, 13.4% (95% CI: 11.2-16.0) had been tested, but not recently, and 22.7% (95% CI: 20.2-25.3) had never been tested and therefore were not up-to-date with guidelines (Figure 1, A). Adults ages 76-84 were somewhat more likely than those in the 50-75 age group to be recently tested [64.0% vs. 59.1 (95% CI: 57.8-60.4)] or tested but not recently [13.4% vs. 8.6% (95% CI: 8.0-9.2)], and less likely to be never tested [22.7% vs. 32.3% (95% CI: 31.1-33.6)]. For ages 76-84, the proportion who had never been tested was high for individuals without a recent physician visit (68.0%); for individuals of other/multiple race (45.3%) or Hispanic/Latino ethnicity (43.5%); for women without a recent mammogram (39.1%); and for men without recent PSA testing (42.4%) (Table 2).

Characteristics of Seniors Ages 76-84 Who Have Never been Tested for CRC

In adjusted analyses, sociodemographic, health care access, and health status characteristics were all associated with never having been tested for CRC among seniors ages 76-84 (vs. recently tested) (Table 3). Seniors of other/multiple race or Hispanic ethnicity were more likely to have never been tested, as were those with high school or less education. Seniors with public only or no health insurance were more likely to have never been tested compared with those with private insurance coverage. Those who had no or only one physician office visit in the past year were more likely to have never been tested compared with seniors who had two or more visits. Seniors who had not received a recent Pap test, mammogram, or PSA test were more likely to never have been tested. Those reporting no family history of CRC or that they did not know their family history were more likely to never have been tested, as were those with one or no chronic disease.

Health Care Provider Recommendations to Adults Not Recently Tested for CRC

Overall, among U.S. seniors ages 76-84 who were not recently or had never been tested for CRC, 5.9% (95% CI: 3.9-8.9) reported receiving a provider recommendation for screening in the past 12 months (data not shown). In the tested but not recently group, 9.3% (95% CI: 5.4-15.7) reported a provider recommendation; in the never tested group, 3.9% (95% CI:

2.0-7.6) reported a provider recommendation (Figure 1, B). These proportions were slightly lower than for the 50-75 age group, but were not statistically significantly different.

Types of CRC Screening Tests Recommended by Health Care Providers

Overall, 9% of respondents ages 50-84 not recently or never tested for CRC reported receiving a provider recommendation for screening in the past 12 months. Of these respondents, nearly three-quarters (73.2%) indicated that the provider recommended particular tests (Table 4). The specific test recommended was overwhelmingly colonoscopy (88.8% colonoscopy only; an additional 1.8% recommended both colonoscopy and FOBT). About 8% of respondents reported that their provider recommended FOBT. Other tests, such as sigmoidoscopy and CT colonography, were mentioned by <3% of respondents.

DISCUSSION

The CRC screening status of seniors ages 76-84 in the U.S. has received minimal attention, despite the burgeoning elderly population. Practice guidelines vary in their recommendations for CRC screening in this age group. Using nationally representative data, we found that 23% of U.S. adults ages 76-84—or about 2,155,000 people—have never been screened. We also found that seniors of other/multiple race or Hispanic ethnicity; less education; lacking private health insurance; with few or no physician visits; no recent screening for breast, cervical, or prostate cancer; no or unknown family history of CRC; or with one or no chronic disease were more likely to never have been screened. These results parallel studies of the 50-75 population that have shown particularly low CRC screening uptake among minorities, those with low socioeconomic status, and those lacking access to health care.¹⁸⁻¹⁹ Further, they illustrate that multi-level factors, such as personal demographics and health status and contact with the health care system, affect CRC screening status.

We also found a very low rate of provider recommendation for screening (4%) among seniors ages 76-84 who had never been tested. This was true as well for younger people (ages 50-75) who were not up-to-date with CRC screening. Moreover, in both age groups (adults ages 50-75 and ages 76-84), among those who reported receiving a provider recommendation for CRC screening but who had not recently or never been tested for CRC, colonoscopy was virtually the only test recommended. This finding is consistent with national data from PCPs indicating their favorable attitudes toward and preferences for colonoscopy.¹⁶ A growing body of work shows that patients have preferences for CRC screening tests, and not all patients prefer colonoscopy, even though most PCPs favor this test.^{16; 23-27} Some patients who receive only an offer of or recommendation for colonoscopy may choose not to get screened at all.²⁸⁻²⁹ Expert groups recommend that providers, particularly PCPs, undertake patient-centered discussions of CRC screening with eligible patients, and offer them options.⁶⁻⁸

The inclusion of national data on seniors ages 76-84 in our study is a novel contribution, and adds to the literature on population screening prevalence. Despite the fact that 25% of all new CRC cases are diagnosed in this age group, few studies have assessed CRC screening in this population.³⁰ Discussions about CRC screening are particularly challenging in the

elderly as there are considerations of comorbid conditions and remaining years of life, and screening tends to have less benefit and carry greater risks in older adults.^{1; 31-33} A recent analysis by Cho and colleagues attempted to shed light on this issue by examining comorbidity-adjusted life expectancy in a sample of Medicare beneficiaries ages 66 years and older.³⁴ Their analysis showed that older adults with higher levels of comorbidity had shorter life expectancies (approximately 3 years) than an average person of the same chronological age, and those with no comorbidities, even very elderly individuals, had longer life expectancies (approximately 3 years) than average adults of the same age. For an “elderly” individual with relatively low health-adjusted age, screening may be appropriate beyond his or her chronological age, thus making patient-centered discussions with PCPs all the more important as a strategy for improving CRC screening rates and reducing CRC morbidity and mortality.

Our study has limitations. Data are based on patient self-reports of screening status and provider recommendation, which may not be accurate. Additionally, NHIS items on health care provider discussions or recommendation of CRC screening were limited. Questions about the content and timing of discussions, patient knowledge of and preferences for test options, and patients’ ratings of informed/shared decision-making may be asked in future NHIS surveys. Future surveys could consider the periodicity of screening, in view of concerns about overscreening. Measurement of potential moderating variables also may have been limited. For example, our health insurance measure did not capture variability in coverage and co-payment requirements for CRC screening. We also did not investigate the potential influence of endoscopist availability on screening status and provider recommendation.³⁵ Finally, because of sample size limitations, we were unable to assess characteristics of respondents ages 76-84 who reported a recent health care provider recommendation for screening. Future work with another data source or an enhanced NHIS sample is needed to better understand CRC screening in the elderly.

In conclusion, we found that nearly one-quarter of seniors ages 76-84 have never been screened and therefore should be considered for CRC screening. We also found very low rates of provider recommendation for CRC screening among individuals in this age group as well as their younger 50-75 year-old counterparts who are not up-to-date with CRC screening. PCPs should ascertain CRC screening status among patients ages 76-84 and initiate discussions about CRC screening with those who have never been tested, taking into account patient health status and life expectancy. Clearly, PCPs can play an important role in CRC control by systematically identifying eligible patients, promoting informed discussions about screening to confirm eligibility and appropriateness and to decide on best testing options, and tracking patients to ensure that CRC screening and follow-up are successfully completed. This key role of the PCP may be facilitated by adoption of a systems approach and systems strategies to promote successful incorporation of CRC screening into the preventive services offered to patients in primary care settings.^{17; 37-38}

ACKNOWLEDGEMENTS

The Division of Cancer Control and Population Sciences, National Cancer Institute, and Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, provided financial support for the Cancer Control Supplement to the 2010 National Health Interview Survey through inter-agency agreements with the

National Center for Health Statistics. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Cancer Institute or the Centers for Disease Control and Prevention. The authors have no conflicts of interest. We thank Timothy McNeel of Information Management Services, Inc., Silver Spring, MD, for programming support.

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Figure 1.

CRC screening and provider recommendation status of U.S. adults ages 50-75 (n=8797) and 76-84 (n=1379)

Data source: National Health Interview Survey (NHIS), 2010; CRC=colorectal cancer

Table 1

Characteristics of respondents ages 76-84, 2010 NHIS

	n	%
Sociodemographic Characteristics		
Gender		
Male	510	41.8
Female	869	58.2
Race		
White	1133	89.3
Black	168	6.5
Other or multiple race	78	4.2
Hispanic or Latino		
No	1263	94.1
Yes	116	5.9
Education		
<12 years	409	24.7
High school graduate/GED	468	36.0
Some college/associate degree	266	19.6
Bachelor's degree or more	229	19.7
Annual family income		
<\$35,000	851	52.3
\$35,000-49,999	217	18.2
\$50,000-74,999	174	14.6
\$75,000	137	14.9
Census region		
Northeast	270	20.3
Midwest	364	25.5
South	455	33.2
West	290	21.1
Health Care Access Characteristics		
Health insurance		
Public only or uninsured	645	43.2
Private	732	56.8
# office visits to doctor or other health professional in past year		
None	77	4.9
One	132	9.1
Two or more	1164	86.0
Received a Pap test in the past 3 years (women)		
No	518	60.4
Yes	321	39.6

	n	%
Received a mammogram in the past 2 years (women)		
No	336	38.3
Yes	517	61.7
Received one or more PSA tests in the past 5 years (men)		
No	167	29.2
Yes	321	70.8
Health Status Characteristics		
History of colorectal cancer in first-degree relative(s)		
No/unknown	1228	87.9
Yes	151	12.1
Reported health status		
Excellent	181	13.2
Very good	385	29.0
Good	447	32.8
Fair/poor	365	25.0
Number of chronic diseases		
None	285	20.3
One	460	32.7
Two	370	27.2
Three or more	259	19.8

Table 2

Characteristics of respondents ages 76-84 by CRC screening status

	Recently tested ^I for CRC (n=838)	Had CRC testing, but not recently (n=190)	Never had CRC testing (n=351)
	% (95% CI)	% (95% CI)	% (95% CI)
Overall	64.0 (60.9-66.9)	13.4 (11.2-16.0)	22.7 (20.2-25.3)
Sociodemographic Characteristics			
Gender			
Male	66.6 (61.7-71.2)	13.1 (9.8-17.3)	20.3 (16.8-24.3)
Female	62.1 (58.2-65.8)	13.6 (10.9-16.9)	24.3 (21.2-27.7)
Race			
White	65.2 (62.0-68.4)	13.7 (11.3-16.5)	21.1 (18.5-23.9)
Black	58.5 (50.1-66.5)	11.8 (6.9-19.5)	29.6 (22.4-38.1)
Other or multiple race	44.9 (32.8-57.7)	9.8 (4.2-21.4)	45.3 (31.6-59.7)
Hispanic or Latino			
No	64.9 (61.7-68.0)	13.8 (11.4-16.5)	21.3 (18.9-24.1)
Yes	48.9 (39.5-58.4)	7.7 (3.6-15.7)	43.5 (34.1-53.3)
Education			
<12 years	53.8 (48.2-59.3)	14.0 (10.6-18.2)	32.2 (27.0-37.8)
High school graduate/GED	61.6 (56.4-66.6)	12.1 (9.0-16.1)	26.3 (21.8-31.2)
Some college/associate degree	69.8 (62.8-76.1)	16.3 (11.3-23.1)	13.8 (9.9-18.9)
Bachelor's degree or more	75.2 (68.2-81.0)	12.0 (7.6-18.4)	12.9 (9.1-17.9)
Annual family income			
<\$35,000	58.8 (54.8-62.7)	14.2 (11.6-17.3)	27.0 (23.7-30.5)
\$35,000-49,999	72.5 (65.0-78.9)	9.1 (5.4-15.0)	18.4 (13.1-25.2)
\$50,000-74,999	69.0 (61.0-76.1)	13.7 (8.6-21.2)	17.3 (12.0-24.1)
\$75,000	66.6 (56.8-75.1)	15.5 (9.3-24.7)	18.0 (11.8-26.4)
Census region			
Northeast	63.0 (55.9-69.6)	8.2 (4.6-14.1)	28.8 (23.3-35.0)
Midwest	63.6 (58.1-68.7)	18.6 (14.3-23.8)	17.9 (13.7-23.1)
South	65.1 (59.7-70.2)	12.9 (9.2-17.7)	22.0 (17.9-26.6)
West	63.5 (56.7-69.8)	12.9 (8.4-19.4)	23.6 (18.6-29.4)
Health Care Access Characteristics			
Health insurance			
Public only or uninsured	58.8 (54.3-63.2)	10.8 (8.3-13.8)	30.4 (26.7-34.5)
Private	67.8 (63.8-71.6)	15.4 (12.4-19.1)	16.8 (13.9-20.0)
# office visits to doctor or other health professional in past year			
None	16.1 (9.3-26.6)	15.8 (6.8-32.6)	68.0 (53.6-79.7)
One	54.0 (43.8-63.8)	10.0 (5.8-16.8)	36.0 (26.3-47.0)

	Recently tested ^I for CRC (n=838)	Had CRC testing, but not recently (n=190)	Never had CRC testing (n=351)
	% (95% CI)	% (95% CI)	% (95% CI)
Two or more	67.7 (64.7-70.7)	13.6 (11.2-16.4)	18.6 (16.4-21.1)
Received Pap test within the past 3 years (women)			
No	56.0 (50.9-61.0)	16.0 (12.2-20.6)	28.0 (23.8-32.7)
Yes	72.9 (66.9-78.2)	11.0 (7.6-15.6)	16.1 (12.0-21.3)
Received mammogram in the past 2 years (women)			
No	45.5 (39.2-51.9)	15.4 (11.4-20.6)	39.1 (33.5-45.0)
Yes	72.8 (67.9-77.2)	12.2 (9.3-15.8)	15.0 (11.7-19.1)
Received one or more PSA tests in the past 5 years (men)			
No	37.4 (29.2-46.3)	20.3 (13.3-29.7)	42.4 (34.3-50.9)
Yes	78.5 (72.9-83.2)	10.4 (7.2-15.0)	11.1 (7.7-15.6)
Health Status Characteristics			
History of colorectal cancer in first-degree relative(s)			
No/unknown	62.1 (58.8-65.2)	13.7 (11.4-16.5)	24.2 (21.6-27.0)
Yes	77.7 (68.5-84.8)	11.0 (6.0-19.2)	11.3 (6.8-18.3)
Reported health status			
Excellent	69.2 (60.4-76.8)	10.2 (5.6-17.8)	20.6 (15.0-27.6)
Very good	64.7 (58.7-70.3)	13.6 (10.0-18.3)	21.7 (17.6-26.4)
Good	63.9 (58.4-69.1)	13.8 (10.3-18.2)	22.3 (18.3-26.9)
Fair/poor	60.7 (54.3-66.8)	13.8 (10.1-18.6)	25.4 (20.4-31.2)
Number of chronic diseases			
None	56.0 (49.3-62.5)	13.2 (9.3-18.5)	30.8 (24.8-37.6)
One	63.0 (57.8-68.0)	13.7 (10.3-17.9)	23.3 (19.2-27.9)
Two	67.1 (61.6-72.1)	13.0 (9.2-18.0)	19.9 (16.1-24.4)
Three or more	69.7 (63.0-75.7)	13.3 (9.1-18.9)	17.1 (12.7-22.5)

Data Source: National Health Interview Survey (NHIS), 2010

CRC: colorectal cancer

^I Recently tested is defined as having a home FOBT in the past year, sigmoidoscopy in the past 5 years, colonoscopy in the past 10 years, or CT colonography in the past 5 years.

Table 3

Multiple logistic regression model comparing characteristics of respondents ages 76-84 who have never been tested for CRC vs. those recently tested¹

	Never tested vs. recently tested OR (95% CI)	p-value
Sociodemographic Characteristics		
Gender		0.100
Male	1.00	
Female	1.34 (0.95-1.90)	
Race		0.002
White	1.00	
Black	1.03 (0.63-1.70)	
Other or multiple race	3.64 (1.77-7.47)	
Hispanic or Latino		0.050
No	1.00	
Yes	1.76 (1.00-3.08)	
Education		0.001
<12 years	2.09 (1.21-3.60)	
High school graduate/GED	1.93 (1.17-3.21)	
Some college/associate degree	0.86 (0.47-1.55)	
Bachelor's degree or more	1.00	
Annual family income		0.828
<\$35,000	1.12 (0.63-2.02)	
\$35,000-49,999	0.87 (0.44-1.72)	
\$50,000-74,999	0.93 (0.45-1.92)	
\$75,000	1.00	
Census region		0.655
Northeast	1.33 (0.80-2.19)	
Midwest	1.09 (0.63-1.86)	
South	1.05 (0.65-1.71)	
West	1.00	
Health Care Access Characteristics		
Health insurance		0.017
Public only or uninsured	1.50 (1.08-2.09)	
Private	1.00	
# office visits to doctor or other health professional in past year		<0.001
None	8.70 (3.91-19.35)	
One	2.07 (1.16-3.71)	
Two or more	1.00	

	Never tested vs. recently tested OR (95% CI)	p-value
Received recent Pap test (past 3 years), mammogram (past 2 years), or PSA test (past 5 years)		<0.001
No/unknown	3.99 (2.78-5.74)	
Yes	1.00	
Health Status Characteristics		
History of colorectal cancer in first-degree relative(s)		0.016
No/unknown	2.25 (1.17-4.35)	
Yes	1.00	
Reported health status		0.704
Excellent	1.00	
Very good	1.27 (0.73-2.22)	
Good	1.29 (0.75-2.22)	
Fair/poor	1.44 (0.78-2.67)	
Number of chronic diseases		0.020
None	2.23 (1.25-3.98)	
One	1.85 (1.11-3.07)	
Two	1.33 (0.79-2.25)	
Three or more	1.00	

Data Source: National Health Interview Survey (NHIS), 2010

¹ Recently tested includes respondents who reported having a home FOBT in the past year, sigmoidoscopy in the past 5 years, colonoscopy in the past 10 years, or CT colonography in the past 5 years.

Table 4

Types of tests recommended to respondents ages 50-84, not recently or never tested for CRC, who reported a health care provider recommendation for CRC screening in the past 12 months (n=355)

	n	% (95% CI)
Health care provider recommended particular tests:		
Yes	251	73.2 (67.4-78.3)
No	102	26.1 (21.1-31.8)
Refused/don't know	2	0.6 (0.1-3.9)
Test or test combination recommended:		
Colonoscopy only	218	88.8 (83.8-92.4)
FOBT only	17	5.7 (3.3-9.6)
Sigmoidoscopy only	1	0.5 (0.1-3.8)
FOBT and colonoscopy	4	1.8 (0.6-5.1)
Other combinations	7	2.4 (1.0-5.7)
Refused/don't know	4	0.8 (0.3-2.2)

Data Source: National Health Interview Survey (NHIS), 2010