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Patient-Physician Colorectal Cancer Screening Discussion Content and Patients' Use of Colorectal Cancer Screening

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Abstract

Objective—The US Preventive Services Task Force recommends using the 5As (i.e., Assess, Advise, Agree, Assist and Arrange) when discussing preventive services. We evaluate the association of the 5As discussion during primary care office visits with patients' subsequent colorectal cancer (CRC) screening use.

Methods—Audio-recordings of N=443 periodic health exams among insured patients aged 50-80 years and due for CRC screening were joined with pre-visit patient surveys and screening use data from an electronic medical record. Association of the 5As with CRC screening was assessed using generalized estimating equations.

Results—93% of patients received a recommendation for screening (Advise) and 53% were screened in the following year. The likelihood of screening increased as the number of 5A steps increased: compared to patients whose visit contained no 5A step, those whose visit contained 1-2 steps (OR=2.96 [95% CI 1.16, 7.53]) and 3 or more steps (4.98 [95% CI 1.84, 13.44]) were significantly more likely to use screening.

Conclusions—Physician CRC screening recommendations that include recommended 5A steps are associated with increased patient adherence.

Practice Implications—A CRC screening recommendation (Advise) that also describes patient eligibility (Assess) and provides help to obtain screening (Assist) may lead to improved adherence to CRC screening.

1. Introduction

The central role that provider recommendations play in colorectal cancer (CRC) screening is well established.(1-2) The National Institutes of Health (NIH) consensus statement on CRC screening,(3) issued on the heels of a call to understand the role of patient-clinician communication in health outcomes,(4) specifically highlights the need for research on

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physician recommendation and CRC screening adherence. Despite such knowledge and calls, there have been relatively few investigations of patient-physician CRC screening discussions in general, and even fewer investigating the association of these discussions with patients' use of recommended CRC screening. Many of these studies have relied on patient self-reports alone,(5-11) but some have used direct observation, audio-recording or both to capture patient-physician CRC screening discussions.(12-21) Among the latter, only two relatively small studies have evaluated the association of patient-physician conversation content with subsequent CRC screening.(15, 21) As such, little evidence exists regarding the impact of patient-physician discussion content on subsequent CRC screening.

In 2004 the US Preventive Services Task Force (USPSTF) advocated for the use of an informed and joint decision-making process when making decisions regarding preventive services use.(22) As part of this recommendation, they suggested clinicians use a "5As" approach when discussing preventive health services with their patients. This approach leads clinicians through a stepped approach of Assessing a patient's eligibility for screening, Advising screening for services that are due, Agreeing and negotiating a course of action with the patient, Assisting in obtaining screening, and Arranging follow up. While evidence supports use of the 5As in the context of preventive counseling (see for example (23-24)) we are not aware of evidence supporting its use in the context of preventive screening. In fact, at the time of issuance, the USPSTF authors acknowledged that while shared decision-making could be supported on the basis of ethical, interpersonal and educational considerations, its impact on patient outcomes remains uncertain. Furthermore, a prior study, which linked data from office visit audio-recordings with subsequent CRC screening, found screening use tended to occur less when office visit interactions included a discussion of the pros and cons of and patient preferences for CRC screening.(15)

Given the limited time patients and physicians have to discuss preventive health services, (25) combined with our knowledge that office visits to primary care improve, but far from ensure, the likelihood of patient use of evidence-based CRC screening,(26-28) it seems imperative to understand how the content of patient-physician office visit discussions is associated with subsequent screening and which patients are at risk of not adhering to a physician recommendation for screening. In this study, we join previously reported data on the use of the 5As derived from audio-recordings of patient-physician office visit discussions(16) with data on CRC screening from an electronic medical record (EMR) to evaluate (1) patient use of CRC screening following a routine periodic health examination (PHE); and (2) the association of the 5As on subsequent CRC screening, controlling for other factors known to be associated with CRC screening use. As such, we are able to identify factors that place patients at risk of not adhering to a physician recommendation for CRC screening.

2. Methods

2.1 Study Setting and Eligibility Criteria

Physician and patient samples were identified from an integrated delivery system serving southeast Michigan. Study eligible physicians were family and general internal medicine physicians practicing in a salaried, multi-specialty medical group which staffs 26 ambulatory care clinics throughout Detroit and surrounding suburbs. Since 2006 the medical group's EMR has included a preventive health services prompt that includes CRC screening.

Patient participants were all insured via a system-affiliated health maintenance organization. Each faced a co-payment for an office visit, but no cost-sharing specific to receipt of CRC screening. In addition to being insured, patients were aged 50-80 years, average risk (i.e., no personal history of CRC, bowel resection, inflammatory bowel disease, polyps or hereditary

non polypsis) and due for CRC screening(29) at the time of a scheduled PHE with a study-participating physician between February 2007 and June 2009. Following a mailed letter of study introduction, patients were recruited for participation via telephone. During the call, study eligibility was confirmed. Those eligible and verbally agreeing completed a brief pre-visit survey and were asked to arrive at their scheduled appointment early to complete informed consent prior to visit audio-recording. A brief post-visit interview and survey were completed immediately following the visit. Participants received a \$20 gift card to a retail chain store. All aspects of the study had approval from each of the relevant Institutional Review Boards.

2.2 Data Sources and Measures

Physician demographic characteristics (age, gender and race), and specialty (family or general internal medicine) were obtained via health system records. The pre-visit patient survey solicited information on socio-demographic characteristics (including age, gender, race, education, and employment and marital status). From these, we constructed variables reflective of patient-physician race and gender concordance. Using 4 items from a previously validated instrument,(30) the pre-visit survey also collected information on patients' CRC screening-related beliefs. These items assessed patients' belief regarding risk of developing CRC cancer (perceived susceptibility) and whether screening could help to protect their health (salience) as well as two items measuring worries and concerns about test results. Height and weight data from the EMR were used to construct body mass index (BMI) for each patient.

We also constructed a variable reflective of the number of preventive health services for which the patient was eligible and due at the time of presentation. Preventive topics of interest were those recommended by the U.S. Preventive Services Task Force (www.uspreventiveservicestaskforce.org) and Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), and for which eligibility and due status could be determined from available data sources. A total of 19 services were considered and included screening (cervical cancer, colorectal cancer, breast cancer, hypertension, cholesterol, diabetes, osteoporosis, vision, and hearing); counseling (aspirin, tobacco, alcohol, calcium, mental health, obesity, diet); and immunizations (pneumococcal, tetanus, influenza). Additional details regarding the construction of this variable can be found elsewhere.(31)

Patient-physician office visit discussion content was obtained via audio-recordings. Three trained research assistants listened to and coded the audio-recordings while following the associated transcripts. As described elsewhere,(32) codes for the 5A steps were developed based on that defined by Sheridan and colleagues.(22) The first step, assess, was defined by any discussion of why the patient was eligible for screening (including patient age, time lapsed between now and previous screening, and indication of due status in EMR prompt). The next step, advise, occurred if the physician made a clear recommendation for screening. The third step, agree, was coded if a course of action was negotiated between the patient and physician, and the fourth step, assist, occurred if the physician provided information regarding scheduling logistics (e.g., a phone number to call or instructed that the clinic would be calling them) or provided the patient with stool cards. The last step, arrange, occurred if the physician discussed either how the patient would receive test results or, if a plan to revisit the topic of CRC screening in the future was articulated. The CRC screening modality recommended by the physician, if any, was also coded.

Inter-rater reliability for coded variables was assessed via Cohen's kappas by having n=43 visits (i.e., a random sample of approximately 10% of all study visits) coded by all three research assistants. Kappas ranged from 0.45 –1.00, with a mean of 0.74. Among variables

for which the occurrence was rare (i.e., <4%) or a kappa was not computable (i.e., the Advise step), percent agreement was computed. Percent agreement for the two rare/not computable variables ranged from 98-100 percent.

The primary outcome of interest was CRC screening as observed in the EMR in the 12 months following the audio-recorded PHE. To be consistent with the USPSTF screening guidelines that were in place at the time of the study,(29) the receipt of any of the following was noted: FOBT, colonoscopy, flexible sigmoidoscopy, or double contrast barium enema. Service use was identified via service codes as has been previously done.(5, 27-28) Patients who received at least one of these tests/procedures were considered screened for CRC.

2.3 Statistical Methods

We report the proportion of the sample whose office visit included each of the 5A steps as well as the proportion by the total number of steps received during the visit. Among these, we report the proportion that used CRC screening during the subsequent year. Differences in the proportions screened by the 5A steps/counts were assessed using unadjusted and adjusted logistic regression models. To fit the adjusted model we first used univariable models to evaluate the association of patient and physician characteristics with both receipt of the 5A steps and CRC screening. Any variable associated with either receipt of the 5As or CRC screening at a $p < 0.20$ level in a univariable model was included in the adjusted model. Because of the nesting of patients/visits by primary care physician, all modeling was conducted using generalized estimating equation (GEE) logistic regression models fit using the SAS procedure PROC GENMOD. (33)

4. Results

4.1 Sample Characteristics

Physician and patient participants/non-participants are described elsewhere.(18) Briefly, 47% of physicians and 50% of patients agreed to participate. Physician participants did not differ from non-participants in age or gender, but were significantly more likely to be African American or a practicing family medicine physician. Patient participants did not differ from non-participants in race or marital status, but were significantly younger and more likely to be female.

Sample physicians (N=64) were on average 49 years old, 56% female and 48% white, 20% Asian/Pacific Islander, 17% African American, and 14% other race. Seventy percent were general internists and 30% family physicians. On average, 7 office visit recordings were completed per physician (range 1-19). Among the 500 consenting patient participants, there were 485 audible recordings. Excluded from consideration are visits for which talk indicated the patient was not due for CRC screening (n=12), had screening scheduled at the time of presentation (n=25), presented in the midst of a related diagnostic workup (n=1) or had a recent history of lung cancer (n=1). Also excluded are visits for which the pre-visit survey was not available (n=3). The resultant sample consisted of 443 primary care patients who were eligible and due for CRC screening at the time of their audio-recorded PHE. Patients were on average 59 years old. Just over a third was male, two thirds were White, and the vast majority (96%) had at least a high school education. Other sample characteristics are depicted in Table 1. On average, patients spent just over an hour in the exam room (mean=62 minutes, range 20–138 minutes), with the physician present for an average of 27 minutes (range 5–67 minutes).

4.2 CRC Screening Recommendations

As illustrated in Table 2, while almost all PHEs (93%) included the Advise step, or a clear recommendation for CRC screening, other steps occurred with more variability. Just over half of visits included the Assist step (55%) and almost a similar proportion (52%) included the Assess step. On the other hand, only 14% included the Agree step and only 3% included the Arrange step. In 7% of visits (n=30) there was no discussion of CRC screening—and thus none of the 5A steps were present. The most commonly occurring combinations of 5A steps are also shown in Table 2. As indicated, the most commonly occurring combination of 5A steps was Advise + Assess + Assist which occurred in 30% of visits. This was followed by Advise only (16% of visits), and Advise + Assess and Advise + Assist (each of which occurred in 15% of visits).

Because of the relative infrequency with which many combinations of 5A steps occurred, we also evaluated the total number of 5A steps included during each office visit discussion (Table 3). Sixteen percent of visits contained only one 5A step (always the Advise step), 34% contained two 5A steps (most often Advise + Assist or Advise + Assess as indicated above) and 43% contained 3 or more 5A steps. Among the latter, the most commonly occurring combination was, as indicated above, the inclusion of 3 steps: Advise + Assess + Assist. Only 3 visits included all 5 of the recommended steps.

In all but 2 visits in which CRC screening was recommended (n=411), the physician endorsed screening via colonoscopy. In 66% of visits (n=292) the physician recommended only colonoscopy screening. In all other visits in which CRC screening was recommended (n=119) the physician endorsed screening via colonoscopy and at least one other modality, usually FOBT.

4.3 Patient Use of Colorectal Cancer Screening and the 5 A Steps

Among the sample, 53% were screened in the year following the audio-recorded PHE: 36% did so via colonoscopy testing, 16% via FOBT, and 2% via another test (data not shown). As depicted in Table 2, prior to adjusting for potential confounders, we found that if a patient's PHE included the Advise step, she was significantly more likely to be screened (56% vs. 23%). The same was true for those receiving the Assess step (63% vs. 43%) and the Assist step (61 vs. 44%), but not the Arrange or Agree steps (50% vs. 54% and 48% vs. 54%, respectively). As illustrated in Table 3, there was also a statistically significant ($p<0.001$) difference in subsequent CRC screening by the number of 5A steps received. Because of the substantively small difference in screening use between patients receiving 1 vs. 2 of the 5A steps (i.e., 47% vs. 51%), coupled with the statistically insignificant pair wise comparison between these two groups, for multivariable modeling we collapsed the 5A count variable into 3 groups: none; receipt of 1-2 steps; and receipt of 3 or more steps.

In unadjusted models (Table 1), we found that a patient's use of CRC screening significantly ($p<0.01$) decreased with increasing patient age and BMI, and was significantly greater among patients seeing an African American physician compared to a white physician. Furthermore, the more preventive health services for which the patient was eligible and due at the time of presentation at the PHE, the less likely they were to follow through on the physician's recommendation for CRC screening ($p<0.01$).

As depicted in Table 4, the multivariable model that controlled for these potential confounders, along with others, found the likelihood of screening following a PHE continued to increase the more 5A steps a patient's office visit discussion included. Specifically, we found statistically significant increases in the likelihood of screening between patient's whose visit included 3 steps and those whose visit included 1 or 2 steps

compared to those with none of the 5A steps (Odds Ratio = 4.98, $p < 0.01$ and Odds Ratio = 2.96, $p < 0.05$, respectively) as well as a significant increase between those whose visit included 3 or more 5A steps compared to only 1 or 2 5A steps (Odds Ratio = 1.70, $p < 0.05$). Results from the adjusted GEE models also found the likelihood of screening use following a PHE also continued to be less as patient age and BMI increased.

5. Discussion and Conclusions

5.1 Discussion

The importance of provider recommendation to CRC screening is well established.(1-2) But details regarding the content of patient-provider discussions and its impact on patients' subsequent use of CRC screening are only beginning to be understood. We found that among primary care patients who are due for CRC screening, CRC screening is usually discussed at the time of a PHE. Yet, only slightly more than half of patients complete screening within the following year. This may be, at least in part, due to variability in how physicians and patients discuss CRC screening. Compared to those who do not discuss CRC screening during their PHE, the likelihood of being screened in the following year was significantly greater for those patients whose physician used 1 or 2 of the USPSTF recommended 5A steps when interacting with their patients about CRC screening, and even greater among those whose physician used 3 or more of these steps.

Our findings once again emphasize the importance of physician recommendation in the CRC screening process. Even those patients whose visit included only a simple physician statement that they should be screened (i.e., Advise) were significantly more likely to be screened compared to those receiving no such counseling. Yet, our findings for the first time illustrate the likely marginal gains of preventive counseling that goes beyond a statement of advise to screen. Patients whose office visit contained 3 or more of the 5A steps were significantly more likely to be screened when compared to those with no screening related conversation as well as compared to those who received only 1 or 2 of the recommended 5A steps. Among those receiving 3 or more of the 5A steps the most common combination was Advise + Assess + Assist. These patients not only received a clear physician recommendation for CRC screening (Advise), but also discussed both the patient's eligibility for screening (Assess) and received verbal assistance in obtaining screening (Assist) (e.g., how to make a colonoscopy appointment). Thus, while nearly all of patient-physician discussions included a clear recommendation for the patient to be screened, this Advise step alone or combination with only one other 5A step falls short of what can be achieved when 3 or more of the 5A steps are used. As use of the 5A framework has been repeatedly advocated, but rarely evaluated in the context of preventive screening, our findings provide important evidence regarding the potential not only to improve preventive health decision making processes in practice, but also improve the use of CRC screening, a known effective preventive health service.

Of note, is that 7% of primary care patients eligible and due for CRC screening, had no CRC screening-related discussion with their physician during the PHE. This presumably represented a missed opportunity to recommend CRC screening. Our prior findings from the same underlying sample of visits illustrate that a wide variety of guideline-recommended preventive health services are discussed during these visits, including preventive screening, counseling, and immunization services.(31) Among these services, it is opportunities for lifestyle and behavioral counseling that were those most often missed, but as illustrated again here, opportunities to recommend cancer screening also are missed, even in the presence of EMR prompts.

Findings here also highlight patient characteristics, including increasing age and BMI, that place a patient at increased risk of not receiving CRC screening once a physician recommendation has been provided. Previous studies have found both obesity(34-38) and increasing age(39) are barriers to cancer screening. Furthermore, a recent study that specifically assessed the factors associated with non-adherence to a clinician recommended colonoscopy found obese patients less likely to receive a colonoscopy.(40) While age is not, and obesity is not easily, amenable to change, and our results do not shed light on why these disparities may be present, knowledge of such patient characteristics is helpful in terms of identifying patients for whom additional information or support may be needed once a physician recommendation for screening has been made. They also point to the need to understand better why some patients are less likely than others to follow up on a physician recommendation for CRC screening. This is particularly critical among obese patients who are at increased risk for CRC.(41-42) Whether this represents a true preference or, as others has suggested,(35) the presence of additional barriers (e.g., embarrassment and discomfort) remains unknown and warrants additional study.

Results should be considered in light of a number of limitations. First, because only 3 visits contained all components of the 5As framework, we are not able to assess the impact of this framework as envisioned by the USPSTF. Furthermore, the limited frequency with which many components occurred may limit the ability to detect statistically significant associations. Nor are we able to formally control for the bias that may result due to the potential selectivity in terms of which patients receive particular steps of the 5A framework or the fact that office staff may have reinforced or filled gaps in the physician's message once the physician left the examination room. We were also not able to consider the social support, transportation or other barriers or facilitators that exist between receipt of a physician recommendation and service use. Finally, care needs to be taken when generalizing findings to other study settings and populations. This is especially true for patients who are uninsured or who may face different types of access barriers between the receipt of a physician recommendation for screening and obtaining that screening, but may also be true for insured patients. Despite patient participation rates being comparable to other similar studies, we know little about those patients who declined study participation, and those not included may differ from those who opted to participate in ways that impact their screening use.

5.2 Conclusions

Our findings illustrate that opportunities to increase rates of CRC screening may exist by improving the way insured primary care patients and physicians discuss recommended screening. Although the complex role that patient-clinician communication plays in care quality is only beginning to be understood, findings here suggest that relatively simple communication content like providing the patient an explanation of why they are eligible and due for screening combined with verbal assistance in obtaining that service may improve patient adherence to physician-recommended CRC screening. Future studies are needed to assess whether time and other barriers serve to limit physician use of the 5A steps in practice as well as whether support staff or other mechanisms can efficiently and effectively deliver the 5A steps to patients at the time of a physician recommendation.

5.3 Practice Implications

A CRC screening recommendation (Advise) that describes patient eligibility (Assess) and provides help to obtain screening (Assist) may lead to improved CRC screening adherence. Furthermore, clinicians should be aware that some patients at relatively high risk for colorectal cancer, specifically, older patients and those who are obese, may be particularly

vulnerable to not receiving CRC screening following an office visit recommendation for such care.

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Table 1

Sample Characteristics: Overall and by Subsequent Colorectal Cancer Screening Use.

	Total (N=443)	Colorectal Cancer Screening Use		
		Yes (N=237)	No (N=206)	Unadjusted P – Value
Patient Characteristics				
Age (mean, sd)	59.1 (8.1)	57.5 (7.3)	60.8 (8.8)	<0.01
Male (%)	35	35	35	0.93
Race (%)				0.08
Black	28	31	24	
White	66	61	71	
Other	7	8	5	
Education				0.15
Less than High School	4	2	6	
High School Diploma	24	24	24	
Some College or More	72	74	70	
Currently Married (%)	66	67	65	0.53
Currently Employed (%)	60	64	57	0.22
BMI (mean, sd)	31.1 (7.2)	30.2 (6.3)	32.2 (8.0)	<0.01
Prior CRC Screening (%)				0.81
No Prior Recommendation	67	68	67	
Previously Screened		4	3	
Prior Rec., No Use	29	28	30	
CRC Screening-related Beliefs ^I (mean, sd)				
Screening is Protective	1.2 (0.6)	1.2 (0.5)	1.2 (0.7)	0.69
Afraid of Abnormal Finding	4.2 (2.4)	4.4 (2.4)	4.1 (2.4)	0.12
Worried Have Cancer	5.0 (2.2)	5.1 (2.2)	4.8 (2.2)	0.17
Perceived CRC Risk	4.4 (2.0)	4.4 (2.0)	4.4 (2.0)	0.73
Number of preventive services due (mean, sd)	5.6 (2.3)	5.2 (2.1)	6.1 (2.4)	<0.01
Physician Characteristics				
Age (mean, sd)	49.8 (7.8)	49.7 (7.8)	49.9 (7.8)	0.76
Male (%)	44	40	48	0.14
Race (%)				<0.01
Black	15	19	9	
White	51	45	57	

	Total (N=443)	Colorectal Cancer Screening Use		
		Yes (N=237)	No (N=206)	Unadjusted P – Value
Other	35	35	34	
Specialty				0.85
General Internist	68	68	68	
Family Physician	32	32	32	
Pt-Physician Relationship				
Race Concordance (%)	50	49	51	0.48
Gender Concordance (%)	73	74	71	0.53

sd = standard deviation; CRC = colorectal cancer; BMI = body mass index

¹ Responses provided on 7-point Likert scale where 1=strongly agree and 7=strongly disagree: I believe that cancer screening can help to protect my health; I am afraid of having an abnormal screening test result; I am worried that screening will show that I have cancer; and I believe that the chance I might develop cancer is high.

Table 2

Percent of Visits with 5A Step(s) and Association with CRC Screening among Step Recipients (n=443)

5A Step(s)	Percent that Included the 5A Step(s)	Percent Completing Screening		Association of 5A Step(s) with CRC Screening: Unadjusted OR
		With 5A Steps(s)	Without 5A Step(s)	
Visits with Any Inclusion (%)				
Assess	52	63	43	2.22 (1.48, 3.32)
Advise	93	56	23	4.31 (1.75, 10.59)
Agree	15	48	54	0.81 (0.43, 1.51)
Assist	56	61	44	1.97 (1.36, 2.85)
Arrange ¹	3	50	54	0.86 (0.30, 2.49)
Common Combinations ²				
Advise Only	16	51	54	0.88 (0.57, 1.37)
Advise + Assess	15	52	54	0.95 (0.51, 1.78)
Advise + Assist	15	47	55	0.71 (0.40, 1.28)
Advise + Assess + Assist	30	69	47	2.53 (1.62, 3.94)
Advise + Assist + Agree	5	48	54	0.79 (0.32, 1.95)

CRC = colorectal cancer; OR = odds ratio

¹ Receipt of either of two subcomponents: “relaying test results” (which occurred during n=6 visits with 83% of those recipients [n=5] being screened) and “revisiting the topic” (which occurred during n=8 visits with 25% of those recipients [n=2] being screened)

² Each unique combination of steps that occurred in >=5% (n=23) visits is included.

Table 3

Percent of Visits by Number of 5A Step(s) and Association with CRC Screening among Step Recipients (n=443)

5A Step(s)	Percent with the 5A Step(s)	Percent Completing Screening	Association of 5A Step(s) with CRC Screening: Unadjusted OR
Cumulative Count (%)			
None	7	23	1.00
One ¹	16	51	3.47 (1.28, 9.44)
Two ²	34	47	3.06 (1.23, 7.59)
Three or more ³	43	65	6.31 (2.46, 16.17)
Collapsed Count (%)			
None	7	23	1.00
1-2 ^{1,2}	50	48	3.19 (1.29, 7.93)
3 ³	43	65	6.33 (2.47, 16.28)

CRC = colorectal cancer; OR = odds ratio

¹ n=71 visits with Advise only

² n=68 visits with Advise + Assist, n= 67 with Advise + Assess, n=13 with Advise + Agree, and n=3 with Advise + Arrange

³ n=133 visits with Advise + Assess + Assist; n= 23 with Advise + Assist + Agree, n=11 with another combination of 3 of the 5As; and n=23 with 4+ of the 5As

Table 4

Factors Associated with Subsequent Colorectal Cancer Screening Use: Adjusted Model Results (N=434)

	OR (95% CI)
5A Steps	
None	1.00
1-2 ²	2.96 (1.16, 7.53)
3 ³	4.98 (1.84, 13.44)
Patient Characteristics	
Age	0.97 (0.94, 1.00)
Male	0.94 (0.56, 1.59)
Race	
White	1.00
Black	1.20 (0.68, 2.13)
Other	1.18 (0.58, 2.38)
Education	
Less than High School	1.00
High School Diploma	2.37 (0.87, 6.48)
Some College or More	2.26 (0.83, 6.01)
Currently Married	1.12 (0.70, 1.81)
BMI	0.96 (0.93, 0.98)
Prior CRC Screening	
Previously Screened	1.00
No Prior Recommendation	0.75 (0.21, 2.65)
Prior Rec., No Use	0.64 (0.17, 2.41)
CRC Screening Beliefs ¹	
Screening is Protective	0.98 (0.63, 1.54)
Afraid of Abnormal Finding	1.05 (0.95, 1.15)
Worried Have Cancer	1.04 (0.93, 1.16)
Number of preventive services due	0.95 (0.87, 1.04)
Physician Characteristics	
Male	0.88 (0.51, 1.53)
Race	
White	1.00
Black	2.28 (0.91, 5.68)

	OR (95% CI)
Other	1.25 (0.73, 2.13)

sd = standard deviation; CRC = colorectal cancer

¹ Responses provided on 7-point Likert scale where 1=strongly agree and 7=strongly disagree: I believe that cancer screening can help to protect my health; I am afraid of having an abnormal screening test result; and I am worried that screening will show that I have cancer.

² n=71 visits with Advise only, n=68 with Advise + Assist, n= 67 with Advise + Assess, n=13 with Advise + Agree, and n=3 with Advise + Arrange

³ n=133 visits with Advise + Assess + Assist; n= 23 with Advise + Assist + Agree, n=11 with another combination of 3 of the 5As; and n=23 with 4+ 5As