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Patient-Physician Discussions of Colorectal Cancer Screening: Delivery of the 5 ‘As’ in Practice

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Abstract

Background—The US Preventive Services Task Force advocates for shared decision-making and 5As framework (assess, advise, agree, assist and arrange) for preventive health recommendations.

Purpose—To describe patient-physician colorectal cancer (CRC) screening discussions, evaluate concordance with 5As framework, and test whether discussion content varies by patient adherence to prior recommendation.

Methods—Direct observation of periodic health examinations in 2007-2009 among primary care patients aged 50-80 due for CRC screening. Qualitative content analyses used to code office visit audio-recordings for occurrence of 5As and other discussion content.

Results—97% of visits contained CRC screening discussion; 31% of these contained evidence of patient non-adherence to prior physician recommendation for CRC screening. While 59% of visits provided some *assistance* (i.e., help scheduling a colonoscopy or delivery of stool cards), the first three steps of 5As (assess, advise, and agree) were rarely comprehensively provided (1-21%). Only 3% included the recommended last step, arrange follow up. Patients non-adherent to a prior recommendation were significantly ($P<0.05$) less likely to have the reason(s) for screening discussed (37% vs. 65%) or be told endoscopy clinic would call to schedule colonoscopy (19% vs. 27%), and significantly more likely to have fecal occult blood testing (FOBT) (34% vs. 25%) or FOBT and colonoscopy recommended (24% vs. 14%) and a screening plan negotiated (21% vs. 14%).

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Conclusions—Most patients due for CRC screening discuss screening with their physician, but with limited application of 5As approach. Opportunities to improve CRC screening decision-making are great, particularly among those non-adherent with prior recommendations.

Keywords

Colorectal cancer screening; physician recommendations; physician-patient communication; decision-making

INTRODUCTION

Studies addressing factors associated with colorectal cancer (CRC) screening highlight the importance of physician recommendations.(1-2) The U.S. Preventive Services Task Force (USPSTF) has advocated for use of an informed and joint decision-making process when making preventive service recommendations.(3) As part of this recommendation, they suggest using a systematic approach which approximates the 5As framework (assess, advise, agree, assist, and arrange). Despite the USPSTF's and other's(4-6) calls for such an approach, the extent to which it is used in practice is not known.

Data from patient-reports(7) and small observational studies(8-9) point to variation in conversation content when CRC screening is discussed. Even when the vast majority of patients report their physician recommending CRC screening, far fewer report being asked about their preferences or being offered a choice among available screening modalities.(7) Qualitative analyses of office visit audio-recordings have identified similar themes.(9) Likewise, in another observational study, Ling and colleagues found little informed decision making occurring during patient-physician discussions of CRC screening.(10)

To date no large observational study has reported how CRC screening recommendations are made in practice. The primary aims of this study are to use a large sample of primary care patient-physician interactions to: (1) describe patient-physician conversation content during CRC screening discussions and evaluate concordance of screening discussion content with the 5As framework; and (2) test whether patient-physician CRC screening discussion content differs when a patient has been non-adherent to a prior physician recommendation for CRC screening.

METHODS

Study Setting

Physician and patient samples were identified from an integrated delivery system in southeast Michigan. The system includes a 1000-member, salaried medical group which staffs 26 clinics in Detroit and surrounding suburbs. Patient participants were those enrolled in an affiliated health plan, all of whom had CRC screening as a covered benefit. Since 2006 the medical group's electronic medical record (EMR) has included a preventive health services prompt that includes CRC screening.

Participant Eligibility Criteria and Recruitment

Eligible clinician participants were family and general internal medicine physicians. Physicians were recruited for study participation via email and personal telephone calls by the study principal investigator (JEL). Those agreeing to participate signed a letter of agreement that included elements of informed consent. Physician participants received a \$5 gift card to a retail chain coffee shop upon study completion.

Patient participants were insured and per EMR data, aged 50 to 80 years and due for screening(11-13) at the time of a scheduled annual periodic health examination 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, patients were invited to participate in the study, and among those verbally agreeing, eligibility was confirmed. Those eligible and verbally agreeing completed a brief survey and were asked to arrive at their scheduled appointment approximately 15 minutes early to enable completion of informed consent prior to visit audio-recording. A brief post-visit interview and survey were completed immediately following the office visit. Patient participants received a \$20 gift card to a retail chain store. All aspects of the study were approved by the medical group's Institutional Review Board.

Physician and patient participants/non-participants are described in detail elsewhere.(14) 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 physician. Patient participants did not differ from non-participants in race or marital status, but were significantly younger and more likely to be female.

Data Sources and Measures

Physician demographic characteristics and specialty certification (family or general internal medicine) were available via health system records. The pre-visit patient survey solicited information on the patient's socio-demographic characteristics and a number of other patient-reported factors.(15-19)

Unless requested to leave, research assistants were present in the examination room when physicians were present. While present they completed an observer checklist that included information regarding time patient was roomed and discharged; time the physician spent in the room; office visit interruptions; and use of gowns, patient lists, computers, and referrals.

Content of patient-physician CRC screening discussions was obtained via audio-recordings. All recordings were transcribed. Members of the research team (JEL, GC, SF, KS, TW) developed a structured coding form based on a priori identified concepts (e.g., the 5As(3)) and used qualitative content analyses to identify emergent issues and themes. Structured forms were used by three trained research assistants to code content of patient-physician CRC screening discussions. Coding was done by listening to audio-recordings while following associated transcripts.

Primary outcomes of interest were occurrences of the 5As. As defined by Sheridan and colleagues,(3) the first step consists of assessment of the patient's need for service and preference for decision making involvement, which when combined constitute "assess." The next step, advise, involves recommending the service, and conveying information about its associated benefits, harms, alternatives and scientific uncertainties. The third step, agree, requires that a course of action be negotiated that considers the patient's preferences, interests and willingness to be screened. The fourth step entails delivering or prescribing the recommended service (assist). The process ends with the arrangement of test result follow up or a plan to revisit in the future (arrange).

Inter-rater reliability was assessed by having n=43 visits coded by all three assistants. Cohen's kappas and, among variables for which the occurrence was rare or a kappa was not computable, percent agreement was used to assess inter-rater reliability. Among the 21 variables describing the 5 As (see Table 2), kappas were computable for 19 variables. Kappas ranged from 0.41 to 1.00, with a mean of 0.64, with 2 exceptions: the kappa for the *arrange* variable and one of its subcomponents ("told how results will be obtained") were 0.0. Both rarely occurred (<3%), and the percent agreement for both was 98%. The two variables for which a Cohen's kappa was not computable were similarly rare occurrences and each achieved 100% percent agreement.

Statistical Methods

Differences in patient socio-demographic and visit characteristics as well as patient-physician discussion content by patients' adherence status to prior CRC screening recommendations were assessed using univariable logistic regression. Because of nesting of visits within primary care physicians, generalized estimating equation approaches were used. Because of the small number of patients who were previously adherent to a prior CRC screening recommendation, tests of statistical significance were limited to comparisons between patients previously non-adherent and those for which there was no evidence of prior physician recommendation for screening.

RESULTS

Sample Characteristics

Among the 500 consenting patient participants, there were 485 audible recordings. Excluded from consideration are visits with no talk related to CRC screening (n=29) or for which talk indicated the patient was not due for CRC screening (n=12). Also excluded are visits in which the patient had screening scheduled at the time of presentation (n=25), presented with symptoms (n=1) or for whom the pre-survey was not available (n=3). The resultant sample consists of 415 patient visits among 64 physicians.

Sample physicians were on average 49 years old, 56% were female and 48% were white, 20% Asian/Pacific Islander, 17% African American, and 14% other race. Seventy percent were general internists and 30% were family physicians. On average, 7 office visit recordings were completed for each physician (range 1-19).

Table 1 describes the characteristics of the patient sample and their visits. On average, patients spent just under half an hour with the physician (mean = 27 minutes, sd=10). In 12% of the visits the patient first raised the topic of CRC screening. In 92% of visits CRC screening-related talk occurred during the history; 21% contained such talk during the physical exam, and 59% during the visit summary. In 81% of visits, the physician used the EMR within the exam room.

Patient and Visit Characteristics by Prior CRC Screening Adherence Status

Sixty-five percent of visits were with patients who had not previously received a physician recommendation for CRC screening, while 31% were with patients who had previously received a recommendation but chose not to be screened (i.e., “non-adherent”), and 4% were among patients who had previously received a recommendation and been screened, but were again due for screening (i.e., “adherent”). Among the non-adherent patients (N=129), 99% had received a recommendation for screening from the same physician they were seeing for the audio-recorded visit. Also among these non-adherent patients, 7% indicated they still had fecal occult blood testing (FOBT) cards and 10% indicated they still had the referral/paperwork for endoscopy screening. Furthermore, among visits with non-adherent patients, physicians explored the reason(s) for the patient's non-adherence 42% of the time. Patients volunteered their reasons for being non-adherent in another 22% of visits, while reason(s) for non-adherence remained unexplored in approximately a third of visits.

As seen in Table 1, there were few differences in the characteristics of patients or their visits by patients' prior adherence status. However, patients who were non-adherent to a prior CRC screening recommendation were significantly ($p<0.05$) older (59.8 vs. 57.9 years of age) compared to those with no prior physician recommendation, less likely to be employed (57% vs. 66%) and tended ($p<0.10$) to be less likely to report an annual income over \$60,000, and more likely to first raise the topic of CRC screening during the visit (16% vs. 10%).

Presence of the 5As Content during Screening Discussions

Table 2 presents the occurrence of the 5As during patient-physician CRC screening discussions. As illustrated in the table, there was wide variation in the content of physician-patient office visit CRC screening discussions. Virtually all visits (99%) contained a clear physician recommendation for screening (one component of *advise*). But only 59% included some type of physician *assistance* in scheduling/arranging or completing screening, and only slightly more than half contained an *assessment* of why the patient was due for screening (56%) (one component of *assess*). Furthermore, just under half (43%) contained an invitation from the physician for the patient to participate in the CRC screening decision (one component of *agree*). Discussion of benefits of screening or available alternative screening tests (both elements of *advise*) each occurred in approximately a quarter of visits, and only 16% included negotiation of a screening plan between the patient and physician (another element of *agree*). Discussion of either the harms or uncertainties associated with screening (components of *advise*) were rarely discussed, as were plans for communicating test results or arranging follow-up discussions (both elements of *arrange*).

In virtually all visits (n=412) the physician endorsed CRC screening via colonoscopy (data not shown). In 69% of visits (n=288) the physician recommended screening with only colonoscopy. With the exception of 3 visits that did not contain a physician endorsement for a specific screening modality, in all other visits (n=124) the physician endorsed screening via colonoscopy and at least one other modality. When this occurred, the overwhelming majority of the time the physician endorsed screening via colonoscopy and FOBT (n=120). Among visits in which both colonoscopy and FOBT were endorsed, physician screening recommendations fell into two groups: those 1) presenting the patient with the option of doing either FOBT or colonoscopy; or 2) recommending that the patient do both FOBT and colonoscopy simultaneously. When the latter occurred the rationale for doing both as described to the patient by the physician tended to fall into one of four categories: 1) do the cards while you wait for a colonoscopy appointment (“there is no urgency with the colonoscopy, but do the cards now while you wait”); 2) do the cards to facilitate the colonoscopy process (if the cards are positive we will “get you in right away” for the colonoscopy/tell them to “look harder” while doing the colonoscopy); 3) a desire to provide a back up option for colonoscopy screening (“...but if you think that you’re going to change your mind when you get home, then I’d rather have the stool test as well...”); or 4) there was not sufficient dialogue to determine the rationale behind the physician’s recommendation for doing both.

Few differences were found in use based on the prior adherence status of the patient (Table 2). However, patients who had been non-adherent to a prior physician recommendation for screening were significantly less likely to have the reasons they were due for screening discussed (37% vs. 65%) or be told that they would receive a call from the endoscopy clinic to arrange a colonoscopy (19% vs. 27%). These patients were also significantly more likely to have a screening plan negotiated with their physician compared to those who were receiving a screening recommendation for the first time (21% vs. 14%). Among visits in which the patient was non-adherent to a prior CRC screening recommendation, the physician was significantly more likely to recommend FOBT (in addition to colonoscopy testing) (34% vs. 25%) and to endorse that FOBT and colonoscopy testing be done simultaneously (24% vs. 16%) (data not shown).

DISCUSSION

In a large, integrated healthcare system, the overwhelming majority of patients due for CRC screening at the time of a periodic health examination received a physician recommendation for screening. Furthermore, physician recommendations for screening were often repeat recommendations, indicating that CRC screening is integrated into ongoing discussions of disease prevention over time. Almost a third of the patient-physician CRC screening discussions indicated that the patient was non-adherent to a previous recommendation for CRC screening. This represents a substantive improvement over rates observed in a direct observation study in the mid-1990s that found physician recommendation for screening occurred in less than half of visits by patients due for CRC screening.(20) Per these more recent observations, patients due for screening not only receive a recommendation, but among visits in which the patient was non-adherent to their physician’s prior recommendation for screening, 16% of the time it was the patient who first raised the topic

of CRC screening and 17% of the time patients indicated that they still have either the stool cards or referral from the prior screening recommendation. Findings here, therefore, show growing salience of CRC screening and are consistent with other recent studies pointing to lack of patient adherence as a potential barrier to CRC screening.(21)

More recently, attention has turned from the simple presence of patient-physician CRC screening discussion to the quality of the interaction. Results from the current study show limited application of the 5 As approach recommended by the USPSTF. While the majority of patients received some type of assistance (either help scheduling a colonoscopy or receipt of stool cards), the first three steps of the 5 As, assess, advise, and agree, were rarely provided in a comprehensive manner, and few visits included the recommended last step, arrange follow up. The latter may be an artifact of the colonoscopy testing process (that is, that the primary care doctor who first recommends CRC screening to the patient is unlikely to be the one relaying test results to the patient).

Despite limited evidence that the use of a stepped approach like the 5As framework results in either improved patient understanding or adherence to evidence-based preventive health services,(6) it is none-the-less concerning to see the relatively limited discussion that ensues when CRC screening is recommended in primary care. Barely half of patients were informed why they were due for screening, and only a quarter of discussions included articulation of benefits of screening or a discussion of screening modality options. This finding is consistent with prior studies,(7-9) and is particularly troubling when one considers that a recent assessment of screening messages in popular magazines indicates that the information necessary for a reader to make an informed decision is not present.(22)

Furthermore, components of the agree step—which arguably is key to engaging the patient in the decision—occurred in less than half of all visits. Previous reports (14, 23) indicate the overwhelming preference by patients to use a shared decision making process when making preventive health decisions in general, and CRC screening decisions specifically, as well as the limited use of a shared decision making process when patients and physicians discuss CRC screening.(14) Evidence that patients have differences in their preferences for CRC screening modalities is also well documented,(8, 24-25) yet few patients were offered a choice regarding screening modality. Certainly the impact of these discordances on adherence to physician recommendations for CRC screening warrants assessment.

While one can easily point to time,(26-27) and competing demands (28) as barriers to comprehensive decision-making processes in busy primary care clinics, there are a couple of points worthy of consideration. First, the most frequently occurring element of the 5As was assistance, a component that arguably could be delegated to office staff and take place outside the patient-physician interaction. Second, few differences were found in the content of the patient-physician discussion by whether or not the patient had been non-adherent to the physician's prior recommendation for screening. Thus, at least as measured by the components of the 5As, there appears to be little change in content of the CRC screening recommendation based on the patient's prior adherence status. Research now suggests that targeted,(29) and to a greater extent, tailored educational messages(30) are more effective than generic ones in terms of facilitating behavior change. Effective counseling techniques,

such as motivational interviewing, similarly consider the patient's specific situation and circumstances. Thus, in the context of patient-physician conversations, which need to be efficient in the use of time, it would seem key to ensure that the content of physician recommendations for CRC screening (or other services) be perceived by the patient as salient and relevant.

The present study is not without limitations. Primary among them is the need for care when generalizing to other populations and settings. Physicians and patients were limited to those affiliated with one large health system. Patients were all insured via an HMO and receiving care in an environment that includes a prompt for CRC screening and affords access to colonoscopy. Thus, whether the frequency of CRC recommendations or whether the screening modalities recommended would be the same elsewhere is not known. Similarly, the presence of the research assistant, tape recorder or both may have altered office visit discussions. However, prior studies have found inconsequential Hawthorne effects using similar methods.(31) (32) Finally, there may be things that are not captured by the coding scheme that are important when examining how patients and physicians discuss CRC screenings. However, qualitative content analyses was used in hopes of minimizing this.

In aggregate, findings here highlight opportunities for both system-level and physician-level improvements. On one hand there appears to be an opportunity to develop office systems to minimize the need for physicians to discuss the logistics of endoscopy appointment scheduling or the actual delivery of FOBT cards and referral. These functions could arguably be delegated to office staff who previously have been found to be more effective at such tasks.(33) The time saved by physicians with the delegation of the assist step, may be better spent ensuring patients understand why CRC screening is indicated, discussing alternative ways to screen for CRC, or more generally engaging patients in a patient-centered CRC screening decision. The addition of such discussion content may help improve screening rates in settings such as the one studied here, where patients due for CRC screening routinely receive a physician recommendation for screening.

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References

1. Guessous I, Dash C, Lapin P, Doroshenk M, Smith RA, Klabunde CN. Colorectal cancer screening barriers and facilitators in older persons. *Prev Med.* Jan-Feb;2010 50(1-2):3–10. [PubMed: 20006644]
2. Beydoun HA, Beydoun MA. Predictors of colorectal cancer screening behaviors among average-risk older adults in the United States. *Cancer Causes Control.* May; 2008 19(4):339–59. [PubMed: 18085415]
3. Sheridan SL, Harris RP, Woolf SH. Shared decision making about screening and chemoprevention. a suggested approach from the U.S. Preventive Services Task Force. *Am J Prev Med.* Jan; 2004 26(1):56–66. [PubMed: 14700714]

4. Glasgow RE, Eakin EG, Fisher EB, Bacak SJ, Brownson RC. Physician advice and support for physical activity: results from a national survey. *Am J Prev Med.* Oct; 2001 21(3):189–96. [PubMed: 11567839]
5. Goldstein MG WE, DePue J. Planning Committee of the Addressing Multiple Behavioral Risk Factors in Primary Care Project. Multiple behavioral risk factor interventions in primary care. Summary of research evidence. *Am J Prev Med.* 2004; 27(2 Suppl):61–79. [PubMed: 15275675]
6. Whitlock EP, Orleans CT, Pender N, Allan J. Evaluating primary care behavioral counseling interventions: an evidence-based approach. *Am J Prev Med.* May; 2002 22(4):267–84. [PubMed: 11988383]
7. Lafata JE, Divine G, Moon C, Williams LK. Patient-physician colorectal cancer screening discussions and screening use. *Am J Prev Med.* Sep; 2006 31(3):202–9. [PubMed: 16905030]
8. Hawley ST, Volk RJ, Krishnamurthy P, Jibaja-Weiss M, Vernon SW, Kneuper S. Preferences for colorectal cancer screening among racially/ethnically diverse primary care patients. *Med Care.* Sep; 2008 46(9 Suppl 1):S10–6. [PubMed: 18725820]
9. McQueen A, Bartholomew LK, Greisinger AJ, Medina GG, Hawley ST, Haidet P, et al. Behind closed doors: physician-patient discussions about colorectal cancer screening. *J Gen Intern Med.* Nov; 2009 24(11):1228–35. [PubMed: 19763699]
10. Ling BS, Trauth JM, Fine MJ, Mor MK, Resnick A, Braddock CH, et al. Informed decision-making and colorectal cancer screening: is it occurring in primary care? *Med Care.* Sep; 2008 46(9 Suppl 1):S23–9. [PubMed: 18725829]
11. Pignone M, Rich M, Teutsch SM, Berg AO, Lohr KN. Screening for colorectal cancer in adults at average risk: a summary of the evidence for the U.S. Preventive Services Task Force. *Ann Intern Med.* Jul 16; 2002 137(2):132–41. [PubMed: 12118972]
12. Smith RA, Cokkinides V, Eyre HJ. American Cancer Society Guidelines for the Early Detection of Cancer, 2005. *CA Cancer J Clin.* Jan-Feb; 2005 55(1):31–44. quiz 55-6. [PubMed: 15661685]
13. Winawer S, Fletcher R, Rex D, Bond J, Burt R, Ferrucci J, et al. Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. *Gastroenterology.* Feb; 2003 124(2):544–60. [PubMed: 12557158]
14. Wunderlich T, Cooper G, Divine G, Flocke S, Oja-Tebbe N, Stange K, et al. Inconsistencies in patient perceptions and observer ratings of shared decision making: the case of colorectal cancer screening. *Patient Educ Couns.* Sep; 2010 80(3):358–63. [PubMed: 20667678]
15. Vernon SW, Myers RE, Tilley BC. Development and validation of an instrument to measure factors related to colorectal cancer screening adherence. *Cancer Epidemiol Biomarkers Prev.* Oct; 1997 6(10):825–32. [PubMed: 9332766]
16. Pinsky PF, Kramer BS, Reding D, Buys S. Reported family history of cancer in the prostate, lung, colorectal, and ovarian cancer screening trial. *Am J Epidemiol.* May 1; 2003 157(9):792–9. [PubMed: 12727673]
17. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: validity of a two-item depression screener. *Med Care.* Nov; 2003 41(11):1284–92. [PubMed: 14583691]
18. Flocke SA. Measuring attributes of primary care: development of a new instrument. *J Fam Pract.* Jul; 1997 45(1):64–74. [PubMed: 9228916]
19. Allen, JPWV., editor. Assessing Alcohol Problems: a guide for clinicians and researchers. 2nd ed.. National Institute of Alcohol Abuse and Alcoholism/US Department of Health and Human Services/Public Health Service/National Institutes of Health; 2003.
20. Stange KC, Flocke SA, Goodwin MA, Kelly RB, Zyzanski SJ. Direct observation of rates of preventive service delivery in community family practice. *Prev Med.* Aug; 2000 31(2 Pt 1):167–76. [PubMed: 10938218]
21. Turner BJ, Weiner M, Yang C, TenHave T. Predicting adherence to colonoscopy or flexible sigmoidoscopy on the basis of physician appointment-keeping behavior. *Ann Intern Med.* Apr 6; 2004 140(7):528–32. [PubMed: 15068980]
22. Katz ML, Sheridan S, Pignone M, Lewis C, Battle J, Gollop C, et al. Prostate and colon cancer screening messages in popular magazines. *J Gen Intern Med.* Aug; 2004 19(8):843–8. [PubMed: 15242469]

23. Schroy PC 3rd, Emmons K, Peters E, Glick JT, Robinson PA, Lydotes MA, et al. The Impact of a Novel Computer-Based Decision Aid on Shared Decision Making for Colorectal Cancer Screening: A Randomized Trial. *Med Decis Making*. May 18.2010
24. Ling BS, Moskowitz MA, Wachs D, Pearson B, Schroy PC. Attitudes toward colorectal cancer screening tests. *J Gen Intern Med*. Dec; 2001 16(12):822–30. [PubMed: 11903761]
25. Leard LE, Savides TJ, Ganiats TG. Patient preferences for colorectal cancer screening. *J Fam Pract*. Sep; 1997 45(3):211–8. [PubMed: 9300000]
26. Kottke TE, Brekke ML, Solberg LI. Making “time” for preventive services. *Mayo Clin Proc*. Aug; 1993 68(8):785–91. [PubMed: 8331981]
27. Yarnall KS, Pollak KI, Ostbye T, Krause KM, Michener JL. Primary care: is there enough time for prevention? *Am J Public Health*. Apr; 2003 93(4):635–41. [PubMed: 12660210]
28. Jaen CR, Stange KC, Nutting PA. Competing demands of primary care: a model for the delivery of clinical preventive services. *J Fam Pract*. Feb; 1994 38(2):166–71. [PubMed: 8308509]
29. Kreuter MW, Strecher VJ, Glassman B. One size does not fit all: the case for tailoring print materials. *Ann Behav Med*. 1999; 21(4):276–83. Fall. [PubMed: 10721433]
30. Noar SM, Benac CN, Harris MS. Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychol Bull*. Jul; 2007 133(4):673–93. [PubMed: 17592961]
31. Hall JA, Irish JT, Roter DL, Ehrlich CM, Miller LH. Satisfaction, gender, and communication in medical visits. *Med Care*. Dec; 1994 32(12):1216–31. [PubMed: 7967860]
32. Ram P, Grol R, Rethans JJ, Schouten B, van der Vleuten C, Kester A. Assessment of general practitioners by video observation of communicative and medical performance in daily practice: issues of validity, reliability and feasibility. *Med Educ*. Jun; 1999 33(6):447–54. [PubMed: 10354322]
33. Cargill VA, Conti M, Neuhauser D, McClish D. Improving the effectiveness of screening for colorectal cancer by involving nurse clinicians. *Med Care*. Jan; 1991 29(1):1–5. [PubMed: 1986175]

Table 1

Patient Socio-Demographic and Visit Characteristics by Patients' Prior Colorectal Cancer Screening Recommendation/Adherence Status

	All N=415	No Prior Recommend. N=270	Prior Recommendation	
			Non-adherent N=129	Adherent N=16
Patient Socio-Demographic Characteristics				
Mean age (sd) *	58.7 (7.9)	57.9 (8.0)	59.8 (7.2)	64.2(8.4)
Female (%)	64	63	70	44
Race (%)				
African American	27	30	24	19
White	66	63	71	75
Other	7	8	5	6
Education (%)				
Less than high school diploma	4	4	4	6
High school diploma	24	27	16	31
Some college or more	73	70	80	63
Employment status (%) *				
Employed/working for pay	62	66	57	50
Unemployed/retired/homemaker	38	34	43	50
Currently married (%)	68	68	70	56
Mean household income (%) ⁺				
<\$20,000	7	6	9	7
\$20,000 – \$60,000	38	37	38	53
>\$60,000	55	57	54	40
Visit Characteristics				
Mean visit length in minutes (sd)				
Time patient present in exam room	61.7 (20.0)	61.0 (20.2)	63.4 (20.4)	60.7 (14.0)
Time physician present in exam room	26.9 (9.9)	26.7 (10.0)	27.1 (9.6)	28.5 (10.1)
EMR used in exam room (%)	81	82	78	88
Female physician (%)	56	54	62	44
Mean physician age	49.5 (7.7)	49.4 (7.8)	49.1(7.6)	54.3 (6.1)
Physician race (%)				
African American	16	16	16	13
White	48	46	53	50

	All N=415	No Prior Recommend. N=270	Prior Recommendation	
			Non-adherent N=129	Adherent N=16
Other	36	38	31	38
Physician specialty (%)				
Family medicine	31	29	31	44
General internal medicine	69	71	34	56
CRC screening discussion (%)				
Initiated by patient ⁺	12	10	16	13
Occurring during history	92	91	94	88
Occurring during physical exam	21	22	17	31
Occurring during visit summary	59	58	59	69

EMR – Electronic Medical Record

sd – Standard deviation

* Indicates a significant difference between patients with no prior physician recommendation for colorectal cancer screening (N=270) and those non-adherent to a prior physician's recommendation for colorectal cancer screening (N=129) at the $p<0.05$ level.

⁺ Indicates a significant difference between patients with no prior physician recommendation for colorectal cancer screening and those non-adherent to a prior physician's recommendation for colorectal cancer screening at the $p<0.10$

Table 2

Occurrence of the 5 As[§] during Primary Care Office Visit Discussions of Colorectal Cancer Screening by Patients' Prior Colorectal Cancer Screening Recommendation/Adherence Status

5 A Components	All N=415	No Prior Recommend N=270	Prior Recommendation	
			Non-adherent N=129	Adherent N=16
Assess (%)				
Need for screening assessed *	56	65	37	63
Decision-making preference assessed	44	40	53	44
Both subcomponents present	21	23	16	25
Advise (%)				
Screening recommended	99	99	100	100
Benefits discussed	25	24	26	44
Harms discussed	9	9	12	6
Alternatives discussed	27	26	29	31
Uncertainties discussed	8	7	8	25
All five subcomponents present	1	0	2	0
Agree (%)				
Plan negotiated *	16	14	21	13
Patient value/preferences considered:				
Patient invited to participate	43	42	45	50
Patient asked/asks questions	14	13	14	31
Modality preferences discussed	4	3	6	0
Plan negotiated and patient value/pref	12	11	13	13
Assist (%)				
Told how to schedule endoscopy	57	55	58	69
Told endoscopy clinic would call them *	24	27	19	27
Given cards/referral	7	7	9	6
At least one subcomponent present	59	59	60	69
Arrange (%)				
How results to be communicated	1	2	1	0
Time to revisiting screening decision	2	2	1	13
Either subcomponent present	3	3	2	13

+ Indicates a significant difference between patients with no prior physician recommendation for colorectal cancer screening and those non-adherent to a prior physician's recommendation for colorectal cancer screening at the p<0.10

[§]5 As (assess, advise, agree, assist, and arrange) as defined by Sheridan et al. (3)

* Indicates a significant difference between patients with no prior physician recommendation for colorectal cancer screening (N=270) and those non-adherent to a prior physician's recommendation for colorectal cancer screening (N=129) at the p<0.05 level.