COLORECTAL CANCER SCREENING AMONG AFRICAN AMERICANS: THE IMPORTANCE OF PHYSICIAN RECOMMENDATION

Vicky Taylor, MD, MPH; Daniel Lessler, MD, MHA; Kathy Mertens, MN, MPH; Shin-Ping Tu, MD, MPH; Alton Hart, MD, MPH; Nadine Chan, MPH; Jianfen Shu, MS; and Beti Thompson, PhD

Seattle, Washington

Introduction: African Americans have higher colorectal cancer incidence and mortality rates than whites. They are also more likely to be diagnosed with late-stage disease and less likely to survive for at least five years after diagnosis. Lack of adherence to colorectal cancer screening recommendations has previously been found to be associated with lower income, lower educational level, and racial/ethnic minority status.

Methods: One hundred-fifty African-American patients (aged 50–79 years) of an inner city hospital, were surveyed by mail and telephone in early 2002. Seventy-six patients completed the survey, and data from 74 surveys were analyzed.

Results: Approximately one-half (55%) of the respondents reported having received a fecal occult blood test (FOBT) in the last 12 months, sigmoidoscopy in the last five years, or colonoscopy in the last 10 years. Thirty-nine percent of the survey participants reported never having received a physician recommendation for FOBT, 60% reported never having received a recommendation for sigmoidoscopy, and 57% reported never having received a recommendation for colonoscopy. Previous physician recommendation was strongly associated ($p<0.001$) with levels of FOBT, sigmoidoscopy, and colonoscopy use.

Discussion: Future studies should examine factors that influence primary care physicians' decision-making about ordering colorectal cancer screening tests, as well as patients' decision-making regarding adherence to physician recommendations. (*J Natl Med Assoc.* 2003;95:806–812.)

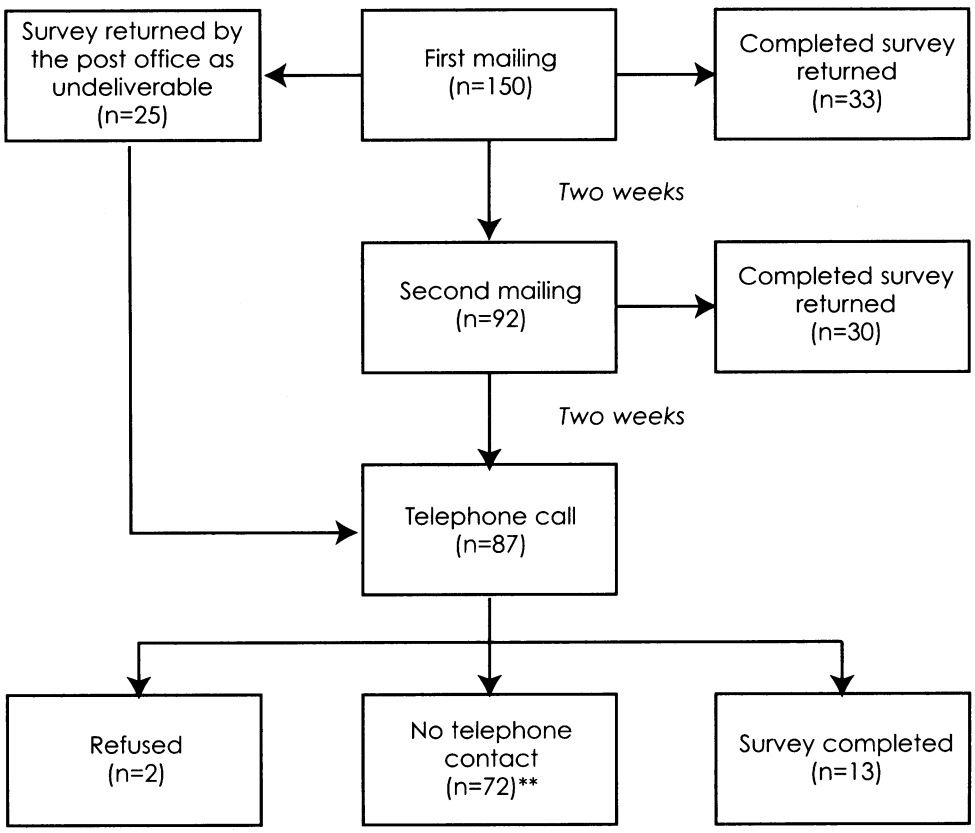
Key words: African-American ♦ colorectal cancer screening ♦ physician recommendation

 From the Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA (Taylor, Hart, Chan, Shu, Thompson); Department of Health Services, University of Washington, Seattle, WA (Taylor, Chan, Thompson); Department of Medicine, University of Washington, Seattle, WA (Lessler, Tu, Hart); and Harborview Medical Center, Seattle, WA (Lessler, Mertens, Tu, Hart). Send correspondence and reprint requests for *J Natl Med Assoc.* 2003;95:806–812 to: Vicky Taylor, MD, MPH; phone: (206) 667-5114; fax: (206) 667-5977; e-mail: vtaylor@fhcrc.org

INTRODUCTION

Cancer of the colon and rectum ranks third among cancer sites in incidence and mortality for both sexes. Over 135,000 new cases of colorectal cancer are diagnosed in the United States each year, and nearly 57,000 persons die of this disease[1]. As with other malignancies, survival from colorectal cancer is closely related to the stage of disease at the time of diagnosis[2]. The five-year survival exceeds 90% for those with localized disease, compared to about 60% when regional lymph nodes are

Figure 1. Study Response*



* 22 (15%) first mailing returned and no telephone contact.
** Includes patients with disconnected telephones and those who were not contactable after five attempts.

involved. Survival rates are less than 10% for persons with distant metastases[2,3]. However, over one-half of all colorectal cancer cases are currently diagnosed with regional or distant disease[3]. National data show that African Americans have higher colorectal cancer incidence (52 versus 46 per 100,000) and mortality (23 versus 18 per 100,000) rates than whites[4-7]. African Americans are also more likely to be diagnosed with late-stage disease and less likely to survive for at least five years after diagnosis[4].

Colorectal malignancies have a long pre-clinical period during which pre-cancerous polyps and early stage cancers can be identified through screening programs[8]. Therefore, authorities recommend initiation of routine screening with one of the following at age 50: fecal occult blood testing (FOBT) every year, sigmoidoscopy every five years, FOBT every year combined with sigmoidoscopy every five years, colonoscopy every 10 years, or barium enema every five to 10 years[8-10]. However, data from the 1997 Behavioral Risk Factor Survey showed that only 40% of respondents aged 50 and older had ever received FOBT and less than one-quarter (20%) had completed FOBT in the 12 months preceding their interview. Similarly, 42% of age-eligible individuals reported at least one previous sigmoidoscopy, and 30% had been screened with sigmoidoscopy in the previous five years[11]. As with other screening modalities, lack of adherence to colorectal cancer screening recommendations has been found to be associated with lower income, lower educational level, and racial/ethnic minority status[3,7,11,12]. Further, a recent

study showed that FOBT use is increasing among white men but not among African-American men, and that African Americans who are poor and have low levels of education are less likely to be screened than similar white Americans[12].

A recent study of health maintenance organization patients demonstrates the importance of physician-patient interactions in enhancing colorectal cancer screening participation levels. Mandelson et al. surveyed women in the 50–80 age-group who were enrolled in Seattle's Group Health Cooperative. Only 73% of study women said they were totally comfortable discussing FOBT with their physician, and only 58% reported their physicians had encouraged FOBT; however, these factors were strongly associated with recent FOBT completion. Further, 84% of the respondents stated they would be likely to complete FOBT if their physician recommended screening. However, approximately 90% of the participants in this study were white and high-school graduates[13].

There is little published information about the colorectal cancer screening practices of African Americans in the U.S. In this brief report, we present the findings from a needs assessment survey that focused on colorectal cancer screening among African-American patients. The aim was to examine the impact of physician recommendation and selected patient beliefs on colorectal cancer screening participation. This survey was conducted at Harborview Medical Center, a county hospital delivering comprehensive medical services to residents of inner city Seattle in early 2002.

Table 1. Study Group Characteristics

Variable	N*	%
Demographics		
Age <60	38	51
Male gender	30	41
< High school education**	16	22
Currently married***	11	15
Health insurance	61	84
Beliefs		
Believed colon cancer is preventable	39	53
Believed African Americans are more likely to get colon cancer than whites	12	16
Screening Behavior		
FOBT ever	43	61
Sigmoidoscopy ever	26	35
Colonoscopy ever	22	30
FOBT last year	24	34
Sigmoidoscopy last five years	22	30
Colonoscopy last 10 years	20	27
Physician Recommendations		
FOBT	41	61
Sigmoidoscopy	25	40
Colonoscopy	29	43
PSA (men only)	13	50
Mammography (women only)	40	95
Pap testing (women only)	37	90

* The total number is less than 74 for some variables because of missing data.

** Less than high school—22%, high school—42%, some college—28%, college—8%.

*** Currently married—15%, divorced or widowed—51%, never married—34%.

METHODS

Survey Sampling and Recruitment

Patients were eligible for the study if they were African-American, 50–79 years of age, English speaking, and had completed a primary care clinic visit at Harborview Medical Center in the previous 12 months. A total of 1,602 patients meeting these eligibility criteria were identified from the hospital's computerized database. Because the study had limited resources, 150 of these patients were randomly selected for participation. Patients were mailed a survey packet that included a letter of introduction from the Associate Medical Director of Harborview Medical Center (DL); a questionnaire; and a stamped, self-addressed envelope for returning the survey. Non-respondents were sent a second survey packet two weeks after the first mailing. Those who failed to respond to either mailing were contacted by telephone one month after the first mailing and asked to complete the survey at the time of contact. Project staff made up to five telephone contact attempts (including at least one daytime, one evening, and one weekend attempt). After completing the survey, respondents were given $10 as a token of appreciation for their time.

Survey Content and Analysis

Our survey content was guided by physicians and other health care providers who serve Harborview Medical Center patients. Participants were asked if they had completed FOBT and, if so, whether they had been tested in the last year. Similarly, they were asked if they had received sig-

Table 2. Variables Associated with Colorectal Cancer Screening

Variable	FOBT ever %	FOBT last year %	Sigmoidoscopy last 5 years %	Colonoscopy last 10 years %
Age				
<60	53	25	21	24
60+	69	43	39	31
Gender				
Male	59	34	33	33
Female	62	33	27	23
Education				
< High school	47	33	25	25
≥ High school	63	31	29	25
Currently married				
Yes	73	36	27	27
No	58	33	30	27
Health insurance				
Yes	67*	36	31	27
No	33	25	25	33
Colon cancer preventable				
Yes	54	38	31	28
No	70	30	29	27
African Americans likelier to get colon cancer				
Yes	45	27	17	25
No/not sure	63	35	32	28
Physician recommendation for FOBT				
Yes	85**	51**	—	—
No	20	8	—	—
Physician recommendation for sigmoidoscopy				
Yes	—	—	64**	—
No	—	—	5	—
Physician recommendation for colonoscopy				
Yes	—	—	—	66**
No	—	—	—	0

* Statistically significant difference: $p<0.05$.
** Statistically significant difference: $p<0.001$.

moidoscopy and colonoscopy. Those who had received a sigmoidoscopy were asked if they had been screened during the last five years, and those who had received a colonoscopy were asked if they had been screened during the last 10 years. (We did not ask about barium enema, because this procedure is not routinely used for screening purposes at Harborview Medical Center.)

Survey participants were also asked the following belief questions: Do you think African Americans or whites are more likely to get colon cancer? and Do you think colon cancer can be prevented? A series of questionnaire items asked whether a doctor had ever recommended the following tests: FOBT, sigmoidoscopy, and colonoscopy. For comparison purposes, men were additionally queried about prostate-specific antigen (PSA) testing recommendations, while women were asked if a doctor had ever recommended mammography and Papinolaou (Pap) testing. Finally, respondents provided information about their age, gender, educational level, marital status,

and health insurance coverage. Chi-square tests and Fisher's exact tests, when appropriate, were used in bivariate analyses, and unconditional logistic regression was used for mulitivariate analysis[14,15].

RESULTS

Response Rate

Twenty-two of the patients in the random sample of 150 could not be contacted by mail or telephone (Figure 1). The cooperation rate among the 128 contactable patients was 59% (i.e., 76 respondents). Two of the respondents were excluded from the analysis, because their survey responses indicated that they were less than 50 years of age. Therefore, data from 74 patients were included in this analysis.

Demographics and Beliefs

Approximately one-half (51%) of the respondents were under 60 (Table 1). Forty-one percent of the survey respondents were male, 22% had less than a high school education, 15% were married, and 84% had some form of health insurance coverage. Over one-half (53%) believed colon cancer to be preventable but only 16% believed that African Americans have a higher risk of colon cancer than whites.

Colorectal Cancer Screening Use

Table 1 presents the patients' self-reported colorectal cancer screening behavior. Sixty one percent reported completing FOBT, 35% reported receiving sigmoidoscopy, and 30% reported receiving colonoscopy. The proportions that were adherent to interval screening guidelines for FOBT, sigmoidoscopy, and colonoscopy were 33%, 30%, and 27%, respectively. Authorities consider that the minimum standard for adequate colorectal cancer screening screening includes FOBT every 12 months, *or* sigmoidoscopy every five years, *or* colonoscopy every 10 years. By this definition, approximately one-half (55%) of the survey respondents were adequately screened[8-10]. However, authorities also recommend that ideally patients should receive FOBT every 12 months *and* sigmoidoscopy every five years, *or* colonoscopy every 10 years. Thirty-one percent of our respondents had been screened according to this alternative guideline[8].

Physician Recommendations

Sixty-one percent of the respondents (50% of men and 69% of women, p=0.11) reported ever having received a doctor's recommendation for FOBT, 40% (36% of men and 43% of women, p=0.56) reported a recommendation for sigmoidoscopy, and 43% (43% of men and 43% of women, p=0.99) reported a recommendation for colonoscopy. Two-thirds (67%) had received a physician recommendation for at least one of the three colorectal cancer screening tests, and one-third (33%) had not received a recommendation for any of the tests. One-half (50%) of the male respondents reported a doctor's recommendation for PSA, 95% of women reported a recommendation for screening mammography, and 90% of women reported a recommendion for Pap testing.

Factors Associated with Colorectal Cancer Screening

Table 2 presents detailed information about the proportions of patients in various subgroups who had been screened for FOBT, sigmoidoscopy, and colonoscopy. Bivariate comparisons for patients who had ever and never completed FOBT, as well as those who had and had not completed this screening test in the previous year, are provided in the table. Patients who reported ever having received a doctor's recommendation for FOBT were significantly more likely to have completed the test ($p<0.001$) and to have been screened in the last 12 months ($p<0.001$). Additionally, Table 2 provides comparisons for sigmoidoscopy in the last five years and colonoscopy in the previous 10 years. (Because almost all of the patients who reported previous sigmoidoscopy and colonoscopy had been screened within the intervals specified by current guidelines, data are not presented for patients who had ever and never received these endoscopic tests.) Respondents who reported having received a physician recommendation were significantly more likely to have received a sigmoidoscopy in the last five years ($p<0.001$) and a colonoscopy during the last 10 years ($p<0.001$). Health insurance coverage was associated with having ever received a FOBT in the bivariate analysis (Table 2) but was not significant after adjustment for physician recommendation in a multivariate analysis.

Patient Characteristics and Physician Recommendations

We compared the characteristics (i.e., age, gender, educational level, marital status, and health insurance coverage) of patients who had and had not received a physician recommendation for FOBT, sigmoidoscopy, and colonoscopy. Patients who had received a FOBT recommendation were significantly more likely to have health insurance coverage (93%) than those who had not received a FOBT recommendation (68%) ($P<0.01$). We found no other significant differences with respect to patient characteristics and physician recommendations.

DISCUSSION

Our 2002 study showed low levels of colorectal cancer screening use persist among inner city African Americans in Seattle. Specifically, 45% were not adherent to current guidelines (i.e., FOBT every year, sigmoidoscopy every five years, or colonoscopy every 10 years). Lipkus et al. investigated colorectal cancer screening risk perceptions among African-American patients of a community health center in North Carolina. Less than 5% of survey respondents thought they were at high risk of colorectal cancer[16]. Similarly, we found that only 16% of our respondents knew that African Americans have a higher risk of colorectal than whites. However, knowledge about this excess risk was not associated with FOBT, sigmoidoscopy, or colonoscopy.

Previous studies have consistently demonstrated the importance of physician recommendation in relation to other screening tests, such as mammography in diverse populations[17-20]. Our findings demonstrate that a previous recommendation from a doctor is strongly associated with the use of colorectal cancer screening tests by African-American patients. Nevertheless, a meaningful proportion of the patients who reported having received physician recommendations for FOBT (49%), sigmoidoscopy (36%), and colonoscopy (34%) were not in adherence with those screening guidelines.

Wolf et al. recently reported their findings from a survey of New York City residents. Only 37% of the respondents believed their physician wanted them to complete FOBT, while 20% believed their physician wanted them to get flexible sigmoidoscopy[21]. About two-fifths (39%) of our participants reported that a doctor had never recommended FOBT, and about three-fifths reported that they had never received a recommendation for sigmoidoscopy (60%) and colonoscopy (57%). In contrast, nearly all female respondents reported a doctor had recommended screening mammography (95%) and Pap testing (90%). There is significant controversy concerning the effectiveness of PSA testing[10]. Therefore, it is also of note that 50% of men reported a physician recommendation for this test.

Vernon published a comprehensive summary of findings from published studies addressing colorectal cancer screening barriers and facilitators in the U.S. Reported barriers to FOBT and/or sigmoidoscopy include low levels of knowledge about colorectal cancer, perceptions that colorectal cancer screening is unnecessary in the absence of symptoms, inconvenience, beliefs that screening tests are embarrassing and unpleasant, fear of abnormal results and surgery, and concern about financial costs[22]. However, this review demonstrated that relatively few studies have focused on low income and racial/ethnic minority populations.

Lemon et al. have recently summarized reasons for slow diffusion of colorectal—compared to breast—cancer screening technologies. They noted that wide promulgation of practice guidelines, as well as widely promoted health plan and physician performance standards, have played important roles in mammography diffusion[23]. Similar programs may positively impact colorectal cancer screening levels. Private insurers are increasingly providing coverage for colorectal cancer screening tests, and Medicare recently authorized reimbursement for screening colonoscopy[24]. These changes in insurance coverage may impact levels of awareness about colorectal cancer screening modalities among physicians as well as patients. Finally, culturally appropriate, community-based educational initiatives might usefully target African-American and other racial/ethnic minority communities.

The reported study has several limitations. First, the participants were all patients of one inner city hospital in Washington state; our findings may not be generalizable to other geographic areas, other African-American population subgroups, and those without a regular source of health care. Second, patients who were not contactable or refused participation may have had different colorectal cancer screening practices than those who responded to the survey. Third, we did not validate patients' self-reported use of FOBT, sigmoidoscopy, and colonoscopy. Fourth, we did not ask patients why

they had received sigmoidoscopy and colonoscopy; some of these procedures were probably related to the diagnosis of symptomatic disease. Fifth, we excluded non-English speaking patients from countries such as Eritrea and Ethiopia, because the translation and interpretation costs associated with administering our survey in multiple languages would have been prohibitive. Last, the sample size was small, and therefore only relatively large differences reached statistical significance.

Our colorectal cancer screening study focused on a previously understudied and disadvantaged population: inner city African Americans. A recent National Cancer Institute plan for reducing racial/ethnic health disparities prioritizes new research to identify and overcome sociocultural and health care system barriers to the adoption of colorectal cancer screening[25]. Future studies should examine factors that influence primary care physicians' decision-making about the ordering of colorectal cancer screening tests, as well as patients' decision-making regarding adherence to physician recommendations.

REFERENCES

1. American Cancer Society. Cancer facts and figures. American Cancer Society, 2001.
2. Landis S, Murray T, Bolden S, Wingo P. Cancer statistics, 1999. CA 1999; 49:8-31.
3. Vernon SW. Participation in colorectal cancer screening: a review. *J Natl Cancer Inst* 1997; 89:1406-1422.
4. Baquet CR, Commiskey P. Colorectal cancer in minorities. *J Assoc Acad Minor Phys* 1999; 10:51-59.
5. Troise RJ, Freedman AN, Devesa SS. Incidence of colorectal carcinoma in the US. *Cancer* 1999; 85:1670-1676.
6. National Cancer Institute. Racial/ethnic patterns of cancer in the United States, 1988-1992. Bethesda: National Institutes of Health, 1996.
7. Reis LA, Wingo PA, Miller DS, et al. The annual report to the nation on the status of cancer, 1973-1997, with a special section on colorectal cancer. *Cancer* 2000; 88:2398-2424.
8. Winawer SJ, Fletcher RH, Miller L. Colorectal cancer screening: clinical guidelines and rationale. *Gastroenterol* 1997; 112:594-642.
9. Rex DK, Johnson DA, Lieberman DA, Burt RW, Sonnenberg A. Colorectal cancer prevention 2000: screening recommendations of the American College of Gastroenterology. *Am J Gastroenterol* 2000; 95:868-877.
10. US Preventive Services Task Force. Guide to clinical preventive services. Williams and Wilkins, 1996.
11. Centers for Disease Control and Prevention. Screening for colorectal cancer—United States, 1997. *MMWR* 1999; 48:116-121.
12. Hoffman-Goetz L, Breen NL, Meissner H. The impact of social class on the use of cancer screening within three racial/ethnic groups in the United States. *Ethn Dis* 1998; 8:43-51.
13. Mandelsohn MT, Curry SJ, Anderson LA, et al. Colorectal cancer screening participation by older women. *Am J Prev Med* 2000; 19:149-154.
14. Rosner B. Fundamentals of biostatistics. Boston: Duxbury, 2000.
15. Breslow NS, Day NE. Statistical methods in cancer research. Volume 1: the analysis of case-control studies. Lyon: International Agency for Research on Cancer, 1980.
16. Lipkus IM, Rimer BK, Lyna PR, et al. Colorectal screening patterns and perceptions of risk among African-American users of a community health center. *J Comm Health* 1996; 21:409-427.
17. Hawley ST, Earp JA, O'Malley M, Ricketts TC. The role of physician recommendation in women's mammography use: is it a 2-stage process? *Med Care* 2000; 38:392-403.
18. Phillips KA, Kerlikowske K, Baker LC, Chang SW, Brown ML. Factors associated with women's adherence to mammography screening guidelines. *Health Serv Res* 1998; 33:29-53.
19. Skinner CS, Arfken CL, Sykes RK. Knowledge, perceptions, and mammography stage of adoption among older urban women. *Am J Prev Med* 1998; 14:54-63.
20. Stoddard AM, Rimer BK, Lane D, et al. Underusers of mammogram screening: stage of adoption in five U.S. subpopulations. *Prev Med* 1998; 27:478-487.
21. Wolf RL, Zybert P, Brouse CH, et al. Knowledge, beliefs, and barriers relevant to colorectal cancer screening in an urban population: a pilot study. *Fam Comm Health* 2001; 24:34-47.
22. Vernon SW. Participation in colorectal cancer screening: a review. *J Natl Cancer Inst* 1997; 89:1406-1422.
23. Lemon S, Zapka J, Puleo E, Luchmann R, Chasan-Taber L. Colorectal cancer screening participation: comparisons with mammography and prostate-specific antigen screening. *Am J Public Health* 2000; 91:1264-1272.
24. Read TE, Kodner IJ. Colorectal cancer: risk factors and recommendations for early detection. *Am Fam Phys* 1999; 59:3083-3092.
25. Office of Special Populations Research. Reducing cancer related health disparities. National Cancer Institute cancer control academy. Bethesda, 2000.