

Assessing Endoscopic Colorectal Screening Adherence in an Emergency Department Population

Jennifer Christie, MD; Denise Nassisi, MD; Ilene Wilets, PhD; Katherine N. DuHamel, PhD; Gary Winkel, PhD; Rhadjena Hilliard, MD; and Lina Jandorf, MA
New York, New York

Financial support: This research was supported by grant #U01-CA86107-01 and grant #R01 CA104130-01 from the National Cancer Institute.

Objectives: Colorectal cancer (CRC) has the second highest cancer-related mortality rate in the United States. However, CRC screening rates, particularly by endoscopy, are dismally low. The purpose of this study is to determine the factors associated with adherence to endoscopic screening using the emergency department (ED) population.

Methods: Structured interviews in English or Spanish were administered to 122 patients, aged ≥ 50 in the ED of an urban academic medical center. Questions focused on sociodemographic and medical factors, knowledge deficits and attitudes towards screening as well as psychosocial factors that may be associated with screening adherence. Compliance with current screening guidelines was measured by self-report.

Results: The population was sociodemographically diverse. There were significant differences across ethnic groups with regards to awareness and attitudes toward screening as well participation in screening. Age >65 , Spanish language during the interview, white ethnicity and having a primary care physician were significant correlates of adherence to screening colonoscopy. Once decisional balance (cons-pros) was entered into the model, the other factors were no longer significant. Furthermore, physician referral was the strongest correlate of adherence to endoscopic screening.

Conclusions: There are significant sociodemographic, medical and psychosocial barriers preventing CRC screening adherence in ED patients, yet the strongest correlate is physician referral. The ED encounter may serve as an opportunity to provide information and referral for CRC screening.

Key words: emergency department ■ colorectal cancer ■ screening ■ endoscopy

© 2006. From the Division of Gastroenterology (Christie) and Departments of Emergency Medicine (Nassisi, Wilets) and Oncological Sciences (DuHamel, Winkel, Hilliard, Jandorf), Mount Sinai School of Medicine, New York, NY. Send correspondence and reprint requests for *J Natl Med Assoc.* 2006;98:1095-1101 to: Dr. Jennifer Christie, Division of Gastroenterology, Mount Sinai School of Medicine, 1 Gustave Levy Place, Box 1069, New York, NY 10029; phone: (212) 241-3109; fax: (212) 426-5099; e-mail: jennifer.christie@mssm.edu

INTRODUCTION

Colorectal cancer (CRC) has the second highest cancer-related mortality rate in the United States.¹ In 2004, an estimated 56,730 people died from CRC.² Endoscopic screening for CRC is effective because precancerous polyps can be removed during the procedure (polypectomy), thus preventing the development of colon cancer.³ The estimated five-year survival rate for CRC is 91% in persons with localized disease, 60% in persons with regional spread, and falls to a dismal 6% in those with distant metastases.⁴ Screening is crucial because CRC is often asymptomatic, particularly in its early stages, when the chance for cure is greatest.

There is sound scientific evidence for reduction in colon cancer mortality with CRC screening. Mandel has demonstrated a 33% reduction in mortality for CRC with fecal occult blood testing (FOBT).^{5,6} Screening sigmoidoscopy has also been shown to reduce CRC mortality.^{7,8} Moreover, colonoscopy with polypectomy decreases mortality from CRC by 90%.³ Current federal consensus recommendations for colorectal screening for average-risk individuals (e.g., those without a family history of CRC or personal history of inflammatory bowel disease) include annual FOBT and flexible sigmoidoscopy or barium enema every five years, or colonoscopy every 10 years, beginning at age 50.⁹ Despite the significant reduction in mortality with CRC screening and early cancer detection, screening rates remain low. This is particularly true in minority populations. As of 2000, the FOBT and lower endoscopy rates in African Americans were 21.6% and 35%, respectively. The rates for Hispanics are the lowest of all ethnic groups, with 15.4% receiving an FOBT in the

past two years, and 31.2% having ever received an endoscopy.¹⁰⁻¹² Both groups lag behind whites, who report 24.1% use of FOBT and 39.2% use of endoscopy.¹⁰ Unfortunately, little is known about the barriers to CRC screening in an urban population. Yet, there may be sociodemographic, medical and psychosocial barriers that limit participation in CRC screening and can be modified in this group.

Sociodemographic factors such as age, language, gender, ethnicity, education, income and insurance coverage have been the most widely investigated. Previous studies that included individuals age >50 have associated age <65, low income and education, being uninsured, single and a monolingual Spanish speaker with a low use of CRC screening tests.^{13,14} Ethnicity also plays an important role in cancer detection and prognosis. When controlled for age, gender, income and access to care, African Americans have been shown to be less likely to have had colonoscopy or sigmoidoscopy compared to whites.¹⁵

Generally, characteristics that have been evaluated to be associated with CRC screening adherence include patient, provider and organizational factors. Receiving a physician recommendation has been identified by numerous studies as one of the most important factors associated with screening.^{16,17}

Furthermore, there is evidence that minorities do not get the same level of preventive care information as nonminorities and that medically underserved minorities in general have less knowledge about cancer than whites. Michielutte and Diseker have argued that differ-

ences in knowledge are due to different means of obtaining information through the media, different levels of education and a reduced ability of minority group members to obtain knowledge about cancer due to less access to quality medical care.¹⁸ For example, over a third of African Americans were found to perceive their primary care physicians as providing little, if any, information about prostate cancer during the medical visit.¹⁹ In addition, there may be cultural and language differences between patients and providers that may limit adequate communication about the need as well as acceptance of cancer screening. Furthermore, primary care providers may change frequently in a clinic setting, thus limiting continuity of care and follow-up of screening recommendations.

There are psychosocial factors that have been found to impact CRC screening behavior. Measures such as: 1) pros and cons that are beliefs about the advantages and disadvantages of screening and are constructs from health promotion theories such as the transtheoretical model (TTM),²⁰ 2) decisional balance (cons-pros),²¹ 3) medical mistrust,^{22,23} and 4) fatalism have previously been found to be associated with an individuals' decision regarding cancer screening.^{24,25} In this paper, we will describe how these factors affect adherence to CRC endoscopic screening in patients evaluated in the emergency department (ED).

The study was conducted under the guidance of the East Harlem Partnership for Cancer Prevention (EHP-CA), which is a collaborative group of healthcare pro-

Table 1. Sociodemographics

	Blacks/African Americans & Afro-Caribbean West Indians (N=122)	Hispanics (N=56)	Whites (N=41)	Sig (N=25)
Mean Age (sd)	62.7 (8.8)	65.3 (11.7)	70.2 (12.7)	*0.016
Language of Interview				
English	96%	56%	100%	**0.001
Spanish	4%	44%	0%	
Education				
<High school	36%	71%	0%	**0.001
High school/GED	43%	10%	28%	
>High school	21%	20%	72%	
Income				
<\$20,000	65%	66%	27%	**0.006
>\$20,000	35%	34%	73%	
Insurance Status				
Medicaid	25%	28%	4%	0.235
Medicare	41%	40%	52%	
Private	23%	25%	40%	
None	11%	7%	4%	
Primary Care Provider				
Yes (%)	77%	78%	84%	0.752
Ever Referred				
Yes (%)	50%	46%	60%	0.552
Adherent				
Yes (%)	46%	45%	70%	0.131

* P<0.05; ** P<0.01

professionals dedicated to determining barriers and, subsequently, creating interventions to reduce these barriers to screening for cancer in minority and other disadvantaged populations in East Harlem.²⁶ Therefore, the aim of this study was to investigate the sociodemographic, medical and psychosocial barriers to endoscopic CRC screening. This study is novel in that the assessment of barriers to CRC screening has never been studied in the ED population. Additionally, the ED is a convenient site in which to gain information about screening behaviors. For many patients, the ED is a common site for interface with the healthcare system, and it provides a vital link to the community, particularly for medically underserved, the uninsured and minority populations. This study was undertaken to better define barriers to CRC screening in urban minorities in East Harlem by recruitment of individuals in the ED.

METHODS

Subjects

Men and women aged ≥50 who were medically stable and able to communicate in English or Spanish were eligible for study participation. Patients were deemed medically stable by the treating physician if their vital signs were stable, they were not in acute distress and no medical procedures were in progress.

Interview

The 30-minute structured interview was conducted in Mount Sinai Hospital’s ED by a bilingual, trained interviewer in Spanish or English depending on patient preference. The instrument was an IRB-approved 123-item survey designed to assess the sociodemographics of the participants, medical characteristics such as the presence of physician recommendation of each screening test, knowledge of and participation in screening endoscopy. Endoscopy refers to either flexible sigmoidoscopy or colonoscopy because both are accepted methods of performing CRC screening in average-risk individuals age of >50 (as discussed above). Informed consent was obtained from patients participating in the study.

Using Likert-style questions, the survey assessed potential psychosocial barriers to screening such as pros and cons, medical mistrust and fatalism. In addition, specific questions pertaining to attitudes and knowledge toward colon cancer screening were

addressed. The participants were given a \$10 gift card to a local store for completing the questionnaire.

MEASURES

Sociodemographic Factors

We assessed whether any of the following factors had an impact on use of endoscopy: age (50–65 or age >65), language of interview (English versus Spanish), ethnicity (African-American, Hispanic or white), level of education (less than or greater than high school), household income (< or >\$10,000/year), and insurance status (federal versus commercial/private versus none).

Medical History

These items addressed past screening for CRC and patient medical history as it pertains to endoscopy. Questions regarding personal cancer history, access to a primary care physician, and whether their primary care doctor had ever recommended endoscopy were included (“yes”/“no”).

Psychosocial Factors

To reduce participant burden, all psychosocial measures were shortened from their original scale. Items were selected to most closely represent the total scale. The alphas for the current study are reported in Table 4.

Table 2. Sociodemographic factors associated with adherence to colorectal cancer screening endoscopy

	Adherence		
	Yes (N=122, Missing=9)	No (N=56)	Sig. (N=57)
Mean Age			
<65	38%	62%	*0.006
>65	64%	36%	
Language of Interview			
English	45%	55%	*0.040
Spanish	70%	30%	
Gender			
Male	57%	43%	0.079
Female	42%	58%	
Race/Ethnicity			
African-American	45%	55%	0.131
Hispanic	45%	55%	
White	70%	30%	
Education			
<High school	43%	57%	0.381
High school/GED	59%	41%	
>High school	49%	51%	
Income			
<\$20,000	56%	44%	0.198
>\$20,000	46%	54%	
Health Insurance			
% Yes	98%	88%	*0.032

* P<0.05; ** P<0.01

The alpha coefficient refers to internal reliability of the scale. Alphas closer to 1 have greater reliability.

Knowledge about colorectal cancer and colorectal cancer screening. This is a 15 item true-false questionnaire developed by the study team and found to be reliable in many other studies. The questionnaire measures patient understanding of the risk factors for CRC and of the medical guidelines for CRC screening. The questionnaire includes true or false questions such as: 1) A person could have CRC but not have any symptoms, and 2) People can get screening tests to find out if they have CRC. Total score was measured as the number correct.

Pros and cons of colorectal cancer screening. This is a 23-item scale adapted by Manne et. al to determine how an individual's attitudes about the advantages (pros) and disadvantages (cons) of colon cancer screening affect their screening decisions.²⁰ We used a shortened version of this instrument, with five pro and six con questions.

In addition to the scores for the pros and cons, a Decisional Balance Index (Cons-Pros) is computed from this measure.

Fatalism. Fatalism was assessed with the Powe Fatalism Inventory.²⁴ This 15-item inventory assesses cancer fatalism and has been used previously to examine African-American fatalism with respect to cancer. We used a modified five-item questionnaire.

Medical mistrust. This six-item measure developed by researchers at Mount Sinai assessed the degree to which individuals believed that healthcare providers treat people of their racial/ethnic group unequally.²³

Decisional balance. This is part of the transtheoretical model for conceptualizing behavioral change. Decisional balance is determined by calculating the difference between the cancer cons and pros score. Decisional balance is proposed to be associated with an individual moving from one stage to another in the continuum of behavioral change.²¹

Additionally, we queried subjects regarding their willingness to undergo CRC screening. Interested subjects were given CRC information, primary care referrals and screening referrals via the EHPCA network; however, assessment of these interventions were not part of the current study design.

DATA ANALYSIS

We analyzed how participant sociodemographic and medical factors were related to the use of endoscopy, which is referred to as adherence. In addition, we analyzed how psychosocial factors affect endoscopy rates in the population studied. We entered data and conducted statistical analyses with SPSS (version 11.0). Descriptive statistics were generated on all study variables. A bivariate analysis was conducted using the Chi-squared and Fisher exact tests for categorical data. Student's unpaired t test was applied to continuous data. Interval level scale variables were tested for homogeneity of variance. Findings with a p value <0.05 were deemed statistically significant.

Multivariate analysis was conducted to determine the correlates of adherence to endoscopic screening. As the outcome is a binary variable, the data were analyzed as a generalized linear model with a logistic link function. The SAS procedure, GENMOD, was employed. For continuous outcomes, the SAS procedure, GLM, was used.

RESULTS

Sociodemographics

The study participation rate was 69%, with no differences in age, gender or ethnicity between the participants and refusers. A total of 152 subjects were interviewed. Thirty patients were excluded from the analysis because they had a personal diagnosis of cancer and would likely to be more knowledgeable about cancer as well as have been screened for CRC (N=22) or because they were not African-American, Hispanic or white (N=8). Of the remaining study population (N=122), the average age was 65 years old (range=50-92). However, the mean age amongst the three ethnic groups was significantly different (p=0.016). Within our population, we found significant ethnic differences with regard to education, level of income and type of health insurance. As expected, Hispanics were significantly more likely to complete the interview in Spanish than were either African Americans or whites. Whites had higher education levels, incomes and tended to be more likely to be privately insured (Table 1).

Univariate Analysis

The sociodemographic factors associated with adherence to screening were age >65 (p=0.006), completing the interview in Spanish (p=0.045) and having health insurance (p=0.036) (Table 2). Additionally, nonadherence among the three groups did not differ significantly. However, when African Americans and Hispanics were combined, they were statistically less likely than whites to be adherent to screening guidelines (not shown in table).

The medical factors associated with adher-

Table 3. Medical factors associated with adherence to colorectal cancer screening endoscopy

Adherence	Adherence		
	Yes	No	
Healthcare provider (% yes)	88%	70%	*0.021
Ever referred (% yes)	98%	11%	**0.001

* P<0.05; ** P<0.01

ence to screening guidelines were both having a primary care provider ($p=0.021$) and physician referral for screening ($p=0.001$) (Table 3).

Alone, cancer cons were the only psychosocial factor significantly associated with adherence to CRC screening guidelines ($p=0.036$) (Table 4).

Before investigators described the procedure, participants were asked if they were aware of the CRC screening exams. Thirty-nine percent replied "yes" for FOBT, 30% were aware of sigmoidoscopy and 53% were aware of colonoscopy. When the exams were described and patients were queried if they had ever undergone one, 74% reported having had an FOBT, 24% had sigmoidoscopy and 40% had colonoscopy. Many more whites had undergone colonoscopy than African Americans or Hispanics ($p=0.001$). This may be due to the high percentage of whites (71%) who had been referred by their physicians for a colonoscopy.

Multivariate Analysis

An initial model examined endoscopic screening as a function of sociodemographic, medical insurance and medical descriptive variables. The initial model indicates that age >65 ($p=0.028$, OR: 2.15, CI: 1.080–4.320), ethnicity ($p=0.006$, OR for whites: 4.546, CI: 1.587–13.021), having a regular healthcare provider ($p=0.037$, OR: 2.391, CI: 1.068–5.555) and completing the interview in Spanish ($p=0.042$; OR: 0.321, CI: 0.102–0.934) were correlates of endoscopic screening. Once "whether a respondent was referred for CRC screening" was introduced into the model (Wald χ^2 : 72.34; $p<0.0001$; OR for those referred: 12.997, CI: 6.276–26.910; OR for those not referred $p=0.275$, CI: 0.164–0.463), the above factors, with the exception of ethnicity, were no longer significant.

Of the psychological factors (knowledge, pros, cons, medical mistrust, fatalism and decisional balance), only decisional balance was a significant correlate of endoscopic screening (Wald $\chi^2=4.06$; $p=0.044$; OR: 0.923, CI: 0.850–0.995). Higher balance scores (i.e., more cons than pros) were associated with lower screening.

When decisional balance (balance) was added to the model, which included age, ethnicity, having a regular healthcare provider and language spoken at the inter-

view, ethnicity was no longer a significant correlate of screening ($p=0.203$). In this model, balance was the only significant correlate of screening (Wald $\chi^2=5.69$; $p=0.017$; OR: 0.909, CI: 0.836–0.980).

While language spoken at the interview and having a regular healthcare provider did not predict balance, dichotomized age and ethnicity were significant predictors of balance ($F=3.94$; $p=0.0499$ and $F=7.38$; $p=0.0010$ respectively). Those aged ≥ 65 had significantly fewer cons than pros for screening (mean balance score for those ≥ 65 years: -6.31 compared to -8.68 for those aged 50–64). Whites had significantly lower ($t=-2.66$; $p=0.0090$) (i.e. more pros than cons) balance scores (mean=-11.12) compared to African Americans (mean=-6.81) and Hispanics (mean=-4.55; $t=-3.84$; $p=0.0002$). However, the addition of the variable describing whether the respondent had been referred for screening yielded a model in which age and balance were no longer significant. Yet, ethnicity was still significant. Therefore, the final model indicated that only ethnicity and referral were significant correlates of adherence to endoscopy CRC screening in this group.

DISCUSSION

This study demonstrates the feasibility of conducting prevention and cancer screening research in the ED setting. We revealed that adherence to CRC screening is significantly associated with sociodemographic including age >65 , ethnicity (white) and Spanish language during the interview. The results regarding age are consistent with previous reports looking at the use of preventive services.¹⁷ However, previously in the literature, Spanish-speaking Hispanics have been found to be less likely to adhere to recommended screening tests.²⁷ Therefore, a model was run predicting this variable (language spoken). This model indicated that those who spoke Spanish were more educated than those that did not. And, those who were employed were more likely to speak Spanish during the interview. The Spanish-speaking Hispanics that were seen in the ED were more likely to be educated and adherent possibly because they are recent immigrants from Spanish-speaking countries who are knowledgeable about colon cancer and the benefits of screening. Overall, this highlights the hetero-

Table 4. Psychosocial factors associated with adherence to screening endoscopy

N=122	Adherent	Nonadherent	Total		
Total Scale Scores	Mean (sd)	Mean (sd)		Sig.	Alpha Coefficient
Knowledge	11.2 (2.1)	11.0 (2.1)	15.0	0.644	0.527
Pros	22.1 (2.7)	20.8 (4.4)	25.0	0.065	0.535
Cons	13.3 (4.7)	15.5 (6.0)	26.0	*0.036	0.735
Medical mistrust	12.3 (5.8)	14.4 (7.3)	30.0	0.100	0.868
Fatalism	1.3 (1.5)	1.8 (1.8)	5.0	0.133	0.794

* $p<0.05$

geneity of Hispanics in an urban setting.

The medical factors associated with adherence to CRC screening guidelines were having a primary care provider and physician referral for screening. However, once physician referral was introduced into the regression model, having a primary care provider was no longer associated with endoscopic screening. Universally, physician recommendation has been found to be associated with compliance with cancer screening.^{16,28,29} Indeed, we confirmed that the single most important medical factor associated with whether a participant had undergone endoscopy was physician recommendation.

Among the factors tested independently, higher cancer cons were the only psychosocial factor associated with not having had endoscopy (with a tendency toward higher cancer pros scores being associated with endoscopy). This suggests that medical mistrust and fatalism may not influence whether individuals from the study population undergo endoscopy if they have a physician referral. In the regression analysis, decisional balance was the only psychosocial factor associated with adherence. Furthermore, dichotomized age and ethnicity were significant predictors of decisional balance. These results suggest that age and ethnicity may have an effect no decisional balance and balance may have an effect on screening.

Nonadherence with CRC screening has also been associated with a lack of knowledge of the disease and the benefits of early detection.^{30,31} While knowledge was not predictive of adherence in this study, cancer cons were associated with screening adherence. Correlation analysis revealed that higher knowledge scores correlated with lower total con values ($R=-.396$, $p=0.01$). Therefore, increasing knowledge may lower cons for CRC screening and subsequently increase adherence. Additionally, over half of the participants who were nonadherent with screening recommendations were interested in receiving a referral for screening. However, fear was often cited as a reason for refusing to undergo screening. Future research should include a measure of fear to see if fear and knowledge are associated with screening behavior. If so, increasing knowledge about CRC endoscopic screening procedures may reduce fear.

Minority members are less likely to seek preventive care or screening tests and are more likely to depend upon emergency departments for routine healthcare.^{32,33} Our minority population however, had a usual source of care. Despite having a primary care physician, 45% of the underrepresented minorities in this study have not had an endoscopic screening exam. We propose that the ED is an important site to provide information and referral for cancer screening and preventive health for all. Patients who present to the ED for mild clinical conditions are a captive audience to provide knowledge pertaining to cancer screening.

Research by Lowenstein et al. indicates a high preva-

lence of chronic illness and injury risk behaviors among ED patients.³⁴ However, Rodriguez et al. reported that many patients had not received selected preventive services.³⁵ These patients, particularly those without primary care providers, expressed interest in initiating these preventive services in the ED. As such, the emergency medicine community has become increasingly involved in public health and preventive medicine. In fact, the Society for Academic Emergency Medicine's (SAEM) Public Health Task Force has evaluated, for ED implementation, preventive service recommendations based on the U.S. Preventive Services Task Force's general recommendations.^{36,37}

Berger et al. studied the utility of informational pamphlets to increase disease screening among ED patients. Subsequently, they demonstrated the need for preventive services in the population presenting to the ED for medical care.³⁸ The Cancer Control Center of Harlem demonstrated the feasibility of providing screening services for breast and cervical cancer in the ED.³⁹ These studies demonstrate the viability of linking preventive services to patients through the ED. We found that the ED is an excellent site to collect information regarding the public's knowledge and utilization of CRC preventive measures, as it is a vital link to the community and for many people it is the primary communication portal with the healthcare system. Thus, the ED is an important place to reach out to the community and educate individuals about the necessity of CRC screening.

One limitation of our study is that we analyzed the data based on whether patients had undergone endoscopy overall. We did not differentiate between participants who had endoscopy for screening only versus those who underwent endoscopy because of symptoms. The rates for CRC screening are likely to be even lower in the sample population. Our sample size was modest yet representative of the East Harlem community. Additionally, the alpha values for the pro/cons and knowledge measures were low. However, this may be due to the fact that we shortened the measures. The final limitation is that we did not evaluate continuity of care in the study which, in addition to having a primary care doctor, may be an important factor in adherence to CRC endoscopic screening recommendations.

The strengths of the study are that we were able to recruit equal numbers of minority men and women into the study. Previously, it had been challenging to recruit men, particularly minority men, into studies. We found that many of our previous recruitment sites (community centers, churches, medical clinics) were largely composed of women. However, the ED in this study proved to be a fertile ground in which to achieve gender equity for our research. Additionally, we were able to collect information on African Americans and Hispanics. It is of particular importance to gain a better understanding of certain screening behaviors in this group as they are

disproportionately burdened with cancer. Lastly, there was a high participation acceptance rate by the ED population we approached.

Increasing adherence to CRC screening guidelines is an important step in reducing existing cancer disparities in CRC incidence and mortality. This study documents the need for preventive services, including provision of information and cancer screening in the population served by the ED, which is largely composed of under-represented minorities. Moreover, physician referral is critical to increasing adherence to CRC screening in this group. It is imperative that additional research be performed to create and subsequently assess the effectiveness of interventions that increase adherence to CRC screening guidelines.

ACKNOWLEDGEMENTS

The authors thank the Health Educators of the East Harlem Partnership for Cancer Awareness and the East Harlem Community.

REFERENCES

1. U.S. Department of Health and Human Services. U.S. Preventive Services Task Force. Guide to Clinical Preventive Services. 2nd ed. Washington, DC; 1999.
2. American Cancer Society. Colon Cancer Facts; 2004.
3. Winawer SJ, Zauber AG, Ho MN, et al. Prevention of Colorectal Cancer by Colonoscopy Polypectomy. *N Eng J Med*. 1993;329:1977-1983.
4. Ries LAG, Kosary CL, Hankey BF, et al. SEER Cancer Statistics Review. Bethesda, MD: National Cancer Institute; 1999.
5. Mandel JS, Bond JH, Church TR, et al. Reducing mortality from colorectal cancer by screening for fecal occult blood. Minnesota Colon Cancer Control Study. *N Engl J Med*. 1993;328(19):1365-1371.
6. Mandel JS, Church TR, Ederer F, et al. Colorectal cancer mortality: effectiveness of biennial screening for fecal occult blood. *J Natl Cancer Inst*. 1999;91(5):434-437.
7. Selby JV, Friedman GD, Quesenberry CP Jr., et al. A case-control study of screening sigmoidoscopy and mortality from colorectal cancer. *N Engl J Med*. 1992;326(10):653-657.
8. Newcomb PA, Norfleet RG, Storer E, et al. Screening sigmoidoscopy and colorectal cancer mortality. *J Natl Cancer Inst*. 1992;84:1572-1575.
9. Winawer SJ, Fletcher RH, Miller L. Colorectal cancer screening: clinical guidelines and rationale. *Gastroenterology*. 1997;112(2):594-642.
10. American Cancer Society. Cancer Facts & Figures for Hispanics/Latinos, 2003-2005.
11. National Health Interview Survey, CDC, NCHS. Increase the proportion of adults who receive a colorectal cancer screening examination. 2002. www.healthypeople.gov/document/html/objective/03-12.htm.
12. Hiatt RA, Klabunde C, Breen N, et al. Cancer screening practices from National Health Interview Surveys: past, present, and future. *J Natl Cancer Inst*. 2002;18(24):1837-1846.
13. Petersen GM. Barriers to preventive intervention. *Gastroenterol Clin North Am*. 2002;31(4):1061-1068, viii.
14. Thompson B, Coronado GD, Solomon CC, et al. Cancer prevention behaviors and socioeconomic status among Hispanics and non-Hispanic Whites in a rural population in the United States. *Cancer Causes Control*. 2002; 13:719-728.
15. Richards RJ, Reker DM. Racial differences in use of colonoscopy, sigmoidoscopy, and barium enema in Medicare beneficiaries. *Dig Dis Sci*. 2002;47(12):2715-2719.
16. Zapka JG, Puleo E, Vickers-Lahfi M, et al. Healthcare system factors and colorectal cancer screening. *Am J Prev Med*. 2002;23(1):28-35.
17. Ruffin MT, Gorenflo DW, Woodman B. Predictors of screening for breast, cervical, colorectal, and prostatic cancer among community-based primary care practices. *J Am Board Fam Pract*. 2000;13(1):1-10.
18. Rimer BK. Audiences and messages for breast and cervical screening. *Health Educ Q*. (in press).
19. Smith GE, DeHaven MJ, Grudning JP, et al. African-American males and prostate cancer: assessing knowledge levels in the community. *J Natl Med Assoc*. 1997;89(6):387-391.
20. Manne S, Markowitz A, Winawer S, et al. Correlates of colorectal cancer screening compliance with stage of adoption among siblings of individuals with early onset colorectal cancer. *Health Psychol*. 2002;21:3-15.
21. Rakowski W, Ehrich B, Goldstein MG, et al. Increasing mammography among women aged 40-74 by use of a stage-matched, tailored intervention. *Prev Med*. 1998;27:1-9.
22. Freeman HP, Muth BJ, Kerner JF. Expanding access to cancer screening and clinical follow-up among the medically underserved. *Cancer Pract*. 1995;3(1):19-30.
23. Thompson HS, Valdimarsdottir HB, Winkel G, et al. The Group-Based Medical Mistrust Scale: psychometric properties and association with breast cancer screening. *Prev Med*. 2004;38:209-218.
24. Powe BD. Fatalism among elderly African Americans. Effects on colorectal cancer screening. *Cancer Nurs*. 1995;18(5):385-392.
25. Hughes C, Fasaye GA, LaSalle VH, et al. Sociocultural influences on participation in genetic risk assessment and testing among African American women. *Patient Educ Couns*. 2003;51(2):107-114.
26. Jandorf L, Fatone A, Borker PV, et al. Creating alliances to improve cancer prevention and detection among urban medically underserved minority groups: The East Harlem Partnership for Cancer Awareness. *Cancer*. (in press).
27. Schur CL, Albers LA. Language, sociodemographics, and health care use of Hispanic adults. *J Health Care Poor Underserved*. 1996;7(2):140-158.
28. Brenes GA, Paskett ED. Predictors of stage of adoption for colorectal cancer screening. *Prev Med*. 2000;31(4):410-416.
29. Ransohoff DF, Sandler RS. Screening for colorectal cancer. *N Engl J Med*. 2002;346:40-44.
30. Weller DP, Owen N, Hiller JE, et al. Colorectal cancer and its prevention: Prevalence of beliefs, attitudes, intentions and behavior. *Aust J Public Health*. 1995;19:19-23.
31. Box V, Nichols S, Lallemand RC, et al. Haemoccult compliance rates and reasons for non-compliance. *Public Health*. 1984;98:16-25.
32. Neighbors H. Ambulatory medical care among adult Black Americans: The hospital emergency room. *J Natl Med Assoc*. 1986;78:275-282.
33. White-Means SI, Thornton MC. Nonemergency visits to hospital emergency rooms: a comparison of blacks and whites. *Milbank Q*. 1989; 67(1):35-57.
34. Lowenstein SR, Koziol-McLain J, Thompson M, et al. Behavioral risk factors in emergency department patients: a multisite survey. *Acad Emerg Med*. 1998;5(8):781-787.
35. Rodriguez RM, Kreider WJ, Baraff LJ. Need and desire for preventive care measures in emergency department patients. *Ann Emerg Med*. 1995; 26(5):615-620.
36. Rhodes KV, Gordon JA, Lowe RA. Preventive care in the emergency department, Part I: Clinical preventive services—are they relevant to emergency medicine? Society for Academic Emergency Medicine Public Health and Education Task Force Preventive Services Work Group. *Acad Emerg Med*. 2000;7(9):1036-1041.
37. Irvin CB, Wyer PC, Gerson LW. Preventive care in the emergency department, Part II: Clinical preventive services—an emergency medicine evidence-based review. *Acad Emerg Med*. 2000;7:1042-1054.
38. Berger P, Luskin M, Krishel S. Preventive health pamphlets in the emergency department. *J Emerg Med*. 1998;16(5):691-694.
39. Mandelblatt J, Freeman H, Winczewski D, et al. The costs and effects of cervical and breast cancer screening in a public hospital emergency room. The Cancer Control Center of Harlem. *Am J Public Health*. 1997; 87(7):1182-1189. ■