

Colorectal Cancer Screening

The best test is the one that gets done...

Colorectal cancer (CRC) is a preventable disease, and screening is cost effective—\$11,890 to \$29,725 per life-year saved.

Oregon CRC screening rates for Medicare beneficiaries are below the national average and far below rates from the best-performing health plans. Approximately half of all Oregonians age 50–75 are not current for an evidence-based screening test and are missing the opportunity for CRC prevention or early diagnosis and cure.

2008 USPSTF Colorectal Cancer Screening Recommendations

- Screen people at average risk, age 50 to 75
- Screen people age 75 to 85 on a case-by-case basis depending on health status
- Do not perform routine screening for people age 85 and older

Evidence-based screening methods producing **equal numbers of life-years saved**:

- colonoscopy every 10 years
- sigmoidoscopy every 5 years with an FOBT at 3 years
- annual high-sensitivity gFOBT or Fecal Immunochemical Test

Caveat: African Americans should begin testing at age 45 and should only receive colonoscopy because of earlier and higher incidence of right-sided adenomatous polyps than for other populations. (American College of Gastroenterology recommendation)

Barriers to Screening

Provider barriers to screening include but are not limited to inability to easily identify people who are due or overdue for screening, time/cost of educating patients and following up on testing recommendations, unreimbursed cost of FOBT kits not returned by patients, and availability of gastroenterologists to perform colonoscopies,

Patient barriers to screening include but are not limited to high out-of-pocket cost, underestimation of risk, lack of primary care provider recommendation, fear of cancer diagnosis, fear of discomfort, and distrust of the healthcare system

Other patient factors associated with low screening rates include lack of a regular primary care provider and low education level.

Strategies that Increase Screening Rates

- **Educate patients** about risks and benefits of screening— an opportunity to prevent cancer
- **Educate staff** about colorectal cancer screening— a chance to save a life
- **Recommend screening** to all eligible patients and develop reliable **reminder strategies**
- **Achieve commitment** to undergo screening through investigation of barriers

Successful Local Initiatives to Increase Colorectal Cancer Screening

Mall walks to promote discussion of colorectal cancer screening

Organizers: Oncology nurses

Initiative design: Members of the Oncology Nursing Society held a series of mall walks during National Colorectal Cancer Awareness Month (March 2008). The nurses wore purple shirts (provided by a drug company) bearing the slogan “Prevent it - Treat it - Beat it.” Participants reported that the mall walkers were successful in attracting people to stop and talk with them about the shirt and then talk about colorectal cancer screening. They repeated the initiative in 2009.

Positive program features: Simple design, low cost, and satisfying for volunteer participants

Barriers: Nursing volunteer time (volunteer time)

Source: Oregon cancer center staff interview

Free colonoscopies provided during National Colorectal Cancer Awareness Month

Organizers: Gastroenterology practice

Initiative design: This initiative is in its second year. Gastroenterology practice committed to the goal of having each gastroenterologist provide two screening colonoscopies per day at no charge to people without insurance, during National Colorectal Cancer Awareness Month. The hospital pathology group partners with the gastroenterologists, providing biopsy processing and interpretation, and the local cancer institute screens patients, determines eligibility, and refers patients to the practice for colonoscopy. The practice succeeded in providing 45 free screening colonoscopies in 2008.

Positive program features: Provided valuable high-quality screening service to individuals who otherwise would have not received screening. Pride and satisfaction reported by clinic staff, gastroenterologists, and pathologists.

Barriers: During the first year of the program the group experienced challenges in developing a system for identifying eligible patients. The current system of screening by the cancer institute is working well.

Source: Interview with practice team of Oregon cancer center physician educator/leader and the practice team

Buddy bracelets and colon cancer awareness T-shirts

Organizers: Gastroenterology practice

Initiative design: This initiative is in its second year. Clinic staff provides a blue plastic “buddy bracelet” to every patient scheduled for a colonoscopy in March, to wear until his or her colonoscopy is completed and then pass on to a friend or relative to wear until that person’s colonoscopy is completed. All clinic staff also wear T-shirts promoting colon cancer awareness throughout National Colorectal Cancer Awareness Month.

Positive program features: Low cost, simple design, fun and satisfying for staff, and actively involved patients as colorectal cancer screening advocates

Barriers: None

Source: Interview with cancer center staff and physician educator /leader and the practice team

Foundation to fund local colorectal cancer prevention activities

Organizers: Hospital foundation fund.

Initiative design: The fund was formed to honor a woman who died of colon cancer. Thus far the committee has raised \$50,000 through quilt shows and other grass-roots activities, becoming an endowed fund in 2009. The committee recently launched the first funded project to provide nonmedical assistance for survivors of all types of cancer, including over-the-counter medicines, transportation, lodging, utilities, and living expenses. Additionally colorectal cancer educational materials are provided at a variety of fundraising events such as the recent “Super Colon” event/boutique, which attracted more than 700 attendees.

Positive program features: Public involvement in advocacy for colorectal cancer screening, taking advantage of an important local story to build interest in screening

Barriers: Raising sufficient funds to support effective outreach

Source: Oregon cancer center staff interview

Automated reminders

Organizer: Large health system

Initiative design: One organization uses its EHR to identify patients eligible for CRC screening (age 50–75 for average risk Whites and 45–75 for average risk African Americans) who are overdue for screening. They provide automated telephonic reminders, with the option of requesting a Hemoccult test kit.

Positive features: Cost effective for a large healthcare system. This approach provides periodic reminders without dependence on encounters. It does not utilize clinical staff time.

Barriers: Too complex or costly for small practices. Requires sophisticated technology.

Source: Interview with cancer center staff and medical director

Physician advocacy

Organizer: Community gastroenterologist

Initiative design: A physician associated with one cancer center routinely counsels all patients presenting for evaluation or treatment to encourage family members and friends to undergo colorectal cancer screening.

Positive features: Simple design, no added cost to treatment, satisfying for physician, takes advantage of opportunity and influence of physician

Barriers: None

Source: Interview with physician educator /leader by referral from the cancer center

Targeting Special Populations

Organizer: Physician with grant funding

Initiative design: Providing education about colorectal cancer screening and offering screening kits at cultural centers that serve people with cultural beliefs that result in lower than average screening rates. Education will be provided ethnically matched staff. Participants will participate in survey to study cultural barriers to screening.

Positive features: Targets populations with low screening rates. The initiative tests a model for increasing impact of education by matching ethnicity of educators and target audience.

Barriers: Grant funding for the study, purchasing FOBT kits, and processing the kits. Resources for referring patients with positive tests for evaluation.

Source: Interview with physician educator /leader by referral from the cancer center

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Colorectal Cancer Screening and Prevention Literature Review

March 10, 2009

Contents

Overview and Risk Factors	2
Guidelines	3
Barriers to Screening and General Strategies to Increase Screening Rates.....	5
Barriers to Screening: Cost and Insurance Status	8
Barriers to Screening and Strategies to Increase Screening Rates: Program Models	9
Barriers to Screening Related to Race and Strategies to Increase Screening Rates.....	11
Screening Efficacy and Findings: Colonoscopy	19
Screening Efficacy and Findings: Fecal Occult Blood Tests	21
Screening Efficacy and Findings: Flexible Sigmoidoscopy	25
Screening Efficacy and Findings: Combinations	26

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
Overview and Risk Factors			
Colorectal Cancer: Update 2008	Brooks D	American Cancer Society, 2008 www.facs.org/cancer/coc/webconf4.html	Overview presentation (PowerPoint)
Smoking and colorectal neoplasia: women require less tobacco exposure for similar increased risk as compared to men	Anderson JC, et al	American College of Gastroenterology Annual Scientific Meeting, October 6, 2008	Overall, both male and female heavy smokers—those who were still smoking or had quit less than ten years ago—had twice the risk of serious colon neoplasia as those who never smoked. Women’s risk from moderate smoking is the same as men’s risk from heavy smoking.
Variants of the adiponectin (ADIPOQ) and adiponectin receptor 1 (ADIPOR1) genes and colorectal cancer risk	Kaklamani VG, Wisinski KB, Sadim M, et al	<i>JAMA</i> . 2008; 300(13): 1523–1531	Current epidemiological evidence suggests an association between obesity, hyperinsulinemia, and colorectal cancer risk. Adiponectin is a hormone secreted by the adipose tissue, and serum levels are inversely correlated with obesity and hyperinsulinemia. In study 1, after adjustment for age, sex, and SNPs from the same gene, 3 ADIPOQ SNPs and 1 ADIPOR1 SNP were associated with colorectal cancer risk: rs266729 (adjusted odds ratio [AOR], 0.72; 95% confidence interval [CI], 0.55-0.95) and rs822396 (AOR, 0.37; 95% CI, 0.14-1.00) were associated with decreased risk whereas rs822395 (AOR, 1.76; 95% CI, 1.09-2.84) and rs1342387 (AOR, 1.79; 95% CI, 1.18-2.72) were associated with increased risk. In study 2, after adjustment for age, sex, race, and SNPs from the same gene, the ADIPOQ SNP rs266729 was associated with a decreased colorectal cancer risk of similar magnitude as in study 1 (AOR, 0.52; 95% CI, 0.34-0.78). Combined analysis of both studies shows an association of rs266729 with decreased colorectal cancer risk (AOR, 0.73; 95% CI, 0.53-0.99).
Dietary patterns associated with colon and rectal cancer: results from the Dietary Patterns and Cancer (DIETSCAN) Project	Dixon LB, Balder HF, Virtanen MJ, et al	<i>AJCN</i> . 2008;80 (4): 1003–1011	Although certain dietary patterns may be consistent across European countries, associations between these dietary patterns and the risk of colon and rectal cancer are not conclusive. Processed meat and potatoes dietary pattern (as compared with vegetables and pork pattern) was associated with increased risk of colon cancer in women in one cohort and with rectal cancer in men in a different cohort. No association with either cancer or either diet was found in a third cohort.
Alcohol intake and colorectal cancer: a pooled analysis of 8 cohort studies	Cho E, Smith-Warner SA, Ritz J, et al	<i>Annals</i> . 2004; 140(8):603–613	Of the 489,979 people in the 8 studies, 4687 developed colorectal cancer. Compared with people who reported drinking no alcohol, people who reported drinking more than 30 grams of alcohol per day (the equivalent of 2 average-size drinks) had a small increase in risk for colorectal cancer. The increase in risk was highest in people who drank more than 45 grams of alcohol per day (> 3 average-size drinks). The authors could not find differences in colorectal cancer risk by the type of alcoholic beverages people drank. In addition, the 8 studies showed no relationship between alcohol intake and the location of colorectal cancers within the intestine.

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
Associations between diet and cancer, ischemic heart disease, and all-cause mortality in non-Hispanic white California Seventh-day Adventists	Fraser GE	<i>AJCN</i> . 1999; 70(3): 532S–538S	Comparison between vegetarian and nonvegetarian Seventh-day Adventists in a large cohort. Cancers of the colon and prostate were significantly more likely in nonvegetarians (RR of 1.88 and 1.54, respectively), and frequent beef consumers also had higher risk of bladder cancer. Intake of legumes was negatively associated with risk of colon cancer in nonvegetarians and risk of pancreatic cancer. Higher consumption of all fruit or dried fruit was associated with lower risks of lung, prostate, and pancreatic cancers. Cross-sectional data suggest vegetarian Seventh-day Adventists have lower risks of diabetes mellitus, hypertension, and arthritis than nonvegetarians. Thus, among Seventh-day Adventists, vegetarians are healthier than nonvegetarians, but this cannot be ascribed solely to the absence of meat in the diet.
Cancer incidence in Mormons and non-Mormons in Utah during 1967–75	Lyon JL, Gardner JW, West GW	<i>J Natl Cancer Inst</i> 1980;65(5):1055–61	Data from the Utah Cancer Registry were used to compare cancer incidence in Mormons and non-Mormons in Utah for the period 1967–75. Church membership was identified for 97.8% of the 20,379 cases in Utah by a search of the central membership files of the Church of Jesus Christ of Latter-Day Saints (or Mormon Church). Sites associated with smoking (lung, larynx, pharynx, oral cavity, esophagus, and urinary bladder) showed an incidence in Mormons at about one-half that of non-Mormons. Rates of cancers of the breast, cervix, and ovary were low in Mormon women; the rate for cervical cancer was about one-half of that observed in non-Mormons. Cancers of the stomach, colon-rectum, and pancreas were about one-third lower in Mormons than in others who are not members of this religious group. Most of the differences seen in cancer incidence can be explained by Mormon teachings regarding sexual activity and alcohol and tobacco use, but some differences (e.g., colon and stomach) remain unexplained.
Colon cancer in a low-risk population	Lyon JL, Sorenson AW	<i>AJCN</i> . 1978; 31: S227–S230	Data are presented on colon mortality in Utah. For the years 1950 to 1969, the state population had 34% fewer deaths from colon cancer than the average United States population. Colon cancer incidence was also studied for the years 1966 to 1970, both for the state and for a large subgroup (Mormons) who abstain from tobacco and alcohol for religious reasons; the colon cancer incidence of Mormons was 37% below the United States average, and that of non-Mormons was 18% below the United States average. A preliminary dietary survey found little difference in meat, fat, and fiber consumption between the population of Utah and that of the United States as a whole.

Guidelines

American College of Gastroenterology Call for African Americans to Begin Screening at Age 45 – Five Years Earlier Than Current		December 2008. http://www.acg.gi.org/media/releases/AfricanAmericanColonCancerSurvivalGap121508.pdf	<p>The high incidence of colorectal cancer in African Americans, combined with a greater prevalence of proximal or right-sided polyps and cancerous lesions in this population, points to colonoscopy as the preferred method of screening for colorectal cancer,” according to David A. Johnson, M.D., FACG, one of the co-authors of ACG’s colon cancer screening recommendations.</p> <p>The American Cancer Society report (mentioned in the release) highlights the role of late diagnosis in the disparity between Blacks and Whites, as well as the critical role of access to screening. According to the Cancer Society, African American patients are more likely than Whites to be diagnosed when the disease is in its later stages.</p> <p>The American College of Gastroenterology recommends colonoscopy as a “first line” screening procedure for colorectal cancer for</p>
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			<p>African Americans rather than flexible sigmoidoscopy because of the high overall risk as well as some evidence that African Americans have more right-sided cancers and polyps. The right side of the colon includes the cecum, ascending colon, and proximal transverse colon, and cannot be reached by flexible sigmoidoscopy.</p> <p>The ACG recommendations for African Americans were published in the March 2005 issue of the <i>American Journal of Gastroenterology</i>.</p>																																				
<p>Screening for colorectal cancer: clinical summary of U.S. Preventive Services Task Force recommendation</p>		<p><i>Annals</i>. 2008; 149 (9):626-637. http://www.annals.org/cgi/content/full/000605-200811040-00243v1#F1</p>	<p style="text-align: center;">SCREENING FOR COLORECTAL CANCER CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION</p> <table border="1" data-bbox="997 558 2077 816"> <thead> <tr> <th>Population</th> <th>Adults Age 50 to 75 Years*</th> <th>Adults Age 76 to 85 Years*</th> <th>Adults Older Than 85 Years*</th> </tr> </thead> <tbody> <tr> <td></td> <td>Screen with high-sensitivity FOBT sigmoidoscopy, or colonoscopy</td> <td>Do not screen routinely</td> <td>Do not screen</td> </tr> <tr> <td>Recommendation</td> <td>Grade: A</td> <td>Grade: C</td> <td>Grade: D</td> </tr> <tr> <td colspan="4" style="text-align: center;">For all populations, evidence is insufficient to assess the benefits and harms of screening with computed tomographic colonography and fecal DNA testing. Grade: I (insufficient evidence)</td> </tr> </tbody> </table> <table border="1" data-bbox="997 833 2077 1247"> <tbody> <tr> <td>Screening Tests</td> <td colspan="3">High-sensitivity FOBT, sigmoidoscopy with FOBT, and colonoscopy are effective in decreasing colorectal cancer mortality. The risks and benefits of these screening methods vary. Colonoscopy and flexible sigmoidoscopy (to a lesser degree) entail possible serious complications.</td> </tr> <tr> <td>Screening Test Intervals</td> <td colspan="3">Intervals for recommended screening strategies: <ul style="list-style-type: none"> • Annual screening with high-sensitivity FOBT • Sigmoidoscopy every 5 years, with high-sensitivity FOBT every 3 years • Screening colonoscopy every 10 years </td> </tr> <tr> <td>Balance of Harms and Benefits</td> <td>The benefits of screening outweigh the potential harms for 50- to 75-year-olds.</td> <td colspan="2">The likelihood that detection and early intervention will yield a mortality benefit declines after age 75 because of the long average time between adenoma development and cancer diagnosis.</td> </tr> <tr> <td>Implementation</td> <td colspan="3">Focus on strategies that maximize the number of individuals who get screened. Practice shared decision making; discussions with patients should incorporate information on test quality and availability. Individuals with a personal history of cancer or adenomatous polyps are followed by a surveillance regimen, and screening guidelines are not applicable.</td> </tr> <tr> <td>Relevant USPSTF Recommendations</td> <td colspan="3">The USPSTF recommends against the use of aspirin or nonsteroidal anti-inflammatory drugs for the primary prevention of colorectal cancer. This recommendation is available at www.preventiveservices.hhs.gov.</td> </tr> </tbody> </table>	Population	Adults Age 50 to 75 Years*	Adults Age 76 to 85 Years*	Adults Older Than 85 Years*		Screen with high-sensitivity FOBT sigmoidoscopy, or colonoscopy	Do not screen routinely	Do not screen	Recommendation	Grade: A	Grade: C	Grade: D	For all populations, evidence is insufficient to assess the benefits and harms of screening with computed tomographic colonography and fecal DNA testing. Grade: I (insufficient evidence)				Screening Tests	High-sensitivity FOBT, sigmoidoscopy with FOBT, and colonoscopy are effective in decreasing colorectal cancer mortality. The risks and benefits of these screening methods vary. Colonoscopy and flexible sigmoidoscopy (to a lesser degree) entail possible serious complications.			Screening Test Intervals	Intervals for recommended screening strategies: <ul style="list-style-type: none"> • Annual screening with high-sensitivity FOBT • Sigmoidoscopy every 5 years, with high-sensitivity FOBT every 3 years • Screening colonoscopy every 10 years 			Balance of Harms and Benefits	The benefits of screening outweigh the potential harms for 50- to 75-year-olds.	The likelihood that detection and early intervention will yield a mortality benefit declines after age 75 because of the long average time between adenoma development and cancer diagnosis.		Implementation	Focus on strategies that maximize the number of individuals who get screened. Practice shared decision making; discussions with patients should incorporate information on test quality and availability. Individuals with a personal history of cancer or adenomatous polyps are followed by a surveillance regimen, and screening guidelines are not applicable.			Relevant USPSTF Recommendations	The USPSTF recommends against the use of aspirin or nonsteroidal anti-inflammatory drugs for the primary prevention of colorectal cancer. This recommendation is available at www.preventiveservices.hhs.gov .		
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<p>Evaluating test strategies for colorectal cancer screening: a decision analysis for the U.S. Preventive Services Task Force</p>	<p>Zauber AG et al</p>	<p><i>Annals</i>.2008;149 (9):659-669</p>	<p>Life-years gained: Equally effective, assuming equally high adherence:</p> <ul style="list-style-type: none"> • colonoscopy every 10 years • annual Hemoccult SENZA (Beckman Coulter, Fullerton, California) testing 																																				

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			<ul style="list-style-type: none"> • annual fecal immunochemical testing (FIT) • sigmoidoscopy every 5 years with mid-interval Hemoccult SENZA <p>Not as effective:</p> <ul style="list-style-type: none"> • Hemoccult II • flexible sigmoidoscopy every 5 years alone
Colorectal Cancer Screening (PDQ®), Health Professional Version		http://www.cancer.gov/cancertopics/pdq/screening/colorectal/HealthProfessional/page1	This summary is intended as a resource to inform clinicians and other health professionals about currently available CRC screening modalities. The PDQ Screening and Prevention Editorial Board uses a formal evidence ranking system in reporting the evidence of benefit and potential harms associated with each screening modality. It does not provide formal guidelines or recommendations for making health care decisions.
Colorectal Cancer Treatment (PDQ®), Health Professional Version		http://www.cancer.gov/cancertopics/pdq/treatment/colon/healthprofessional/allpages	This PDQ cancer information summary for health professionals provides comprehensive, peer-reviewed, evidence-based information about the treatment of colon cancer. This summary is reviewed regularly and updated as necessary by the PDQ Screening and Prevention Editorial Board. Information about the following is included in this summary: Prognostic factors, Cellular classification, Staging, and Treatment options by cancer stage. This summary is intended as a resource to inform and assist clinicians who care for cancer patients. It does not provide formal guidelines or recommendations for making health care decisions.
Colorectal Cancer Prevention (PDQ®), Health Professional Version		http://www.cancer.gov/cancertopics/pdq/prevention/colorectal/healthprofessional/allpages	This PDQ cancer information summary for health professionals provides comprehensive, peer-reviewed, evidence-based information about colorectal cancer prevention. This summary is reviewed regularly and updated as necessary by the PDQ Screening and Prevention Editorial Board. Information about the following is included in this summary: Colorectal cancer incidence and mortality statistics and information about colorectal cancer risk factors, Interventions for colorectal cancer prevention, Benefits and harms of interventions to prevent colorectal cancer. This summary is intended as a resource to inform clinicians and other health professionals about the currently available information on colorectal cancer prevention.
Barriers to Screening and General Strategies to Increase Screening Rates			
Beliefs, risk perceptions, and gaps in knowledge as barriers to colorectal cancer screening in older adults	Berkowitz Z, Hawkins NA, Peipins LA, White MC, Nadel	<i>J Am Geriatr Soc.</i> 2008;56(2):307-14	OBJECTIVES: To assess beliefs and perceptions of risk about colorectal cancer (CRC) and gaps in knowledge about screening in adults aged 65 to 89. DESIGN: A population-based survey. SETTING: United States. PARTICIPANTS: A total of 1,148 respondents with no history of CRC, representing an estimated population of 31.6 million persons, who were stratified according to screening behavior (up to date (n=457) vs not up to date (n=691)) and age (65-74 vs 75-89). MEASUREMENTS: The Health Information National Trends Survey (2003) questionnaire. RESULTS: An estimated 25% of adults aged 65 to 89 had not heard of the fecal occult

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	MR		blood test, 17% had not heard of sigmoidoscopy or colonoscopy, and 42% were not up to date with either screening modality. Not visiting a healthcare provider in the previous year, not knowing about tests available for colon cancer, perceiving the arrangements to be checked for detecting colon cancer to be difficult, and not having an opinion about it and its cost, were significantly associated with not being up to date (each $P < .03$). Persons who were not up to date were frequently unaware of the importance of CRC screening, and often reported lack of a provider's recommendation to be screened (>75%). Lack of knowledge and awareness were more prevalent in those aged 75 to 89 than those aged 65 to 74. CONCLUSION: Lack of knowledge and awareness and the absence of a physician's recommendation to be tested might explain not being up to date with CRC screening in adults in these age groups. These findings suggest a potential value for better communication between older adults and their providers regarding screening for CRC, when appropriate.
Reasons for declining colorectal cancer screening by older Canadians: a pilot study	Hoffman-Goetz L, Thomson MD, Donelle L	<i>J Cancer Educ.</i> 2008;23(1):32-6	BACKGROUND: Although colorectal cancer (CRC) is the second leading cause of cancer death in Canada, only 4% to 14% of eligible adults follow screening recommendations. In this pilot study, we explored older Canadians' perception of the barriers and enabling factors associated with CRC screening participation. METHODS: Interviews from 100 participants, age 50 through 90 years, were analyzed using a mixed qualitative and quantitative methods approach. We used constant comparative analysis, Pearson chi2, and Fisher's exact probability tests. RESULTS: Themes impacting screening participation included physician screening recommendations, reasons for declining screening, surprise at CRC information, and barriers to understanding cancer information. CONCLUSION: Education emphasizing the importance of early detection through screening is needed.
Relationship of communication and information measures to colorectal cancer screening utilization: results from HINTS	Ling BS, Klein WM, Dang Q	<i>J Health Commun.</i> 2006;11 Suppl 1:181-90	Utilization of colorectal cancer screening tests is suboptimal. Knowledge of colorectal cancer screening has been associated with completion of screening. Thus, increasing awareness of colorectal cancer screening may lead to significant improvements in screening rates. We assessed for the association among provider-patient interaction, information-seeking patterns, sources of information, trust in cancer information, and Internet usage on colorectal cancer screening behavior using data obtained by the Health Information National Trends Survey (HINTS). From a cohort of 2,670 respondents greater than 50 years of age, we found that they (1) desired cancer information from personalized reading materials, meeting in person with a health care professional, and published materials; and (2) had great trust of information from their provider. Having trust in cancer information from the doctor or other health care professional was most predictive (OR 2.08, 95% CI 1.49-2.94) of being up to date. Other predictive factors include having a desire for cancer information from personalized reading materials (OR 1.56, 95% CI 1.24-1.95) and using the Internet from home (OR 1.32, 95% CI 1.04-1.67). We conclude that personalized communications from a health care provider are desired and trusted. Another promising information delivery approach is the Internet. Dedicated efforts using these approaches for information exchange may be most beneficial toward increasing utilization of colorectal cancer screening.
Barriers to colorectal cancer screening: a comparison of reports from primary care physicians and average-risk	Klabunde CN, Vernon SW, Nadel MR, Breen	<i>Med Care.</i> 2005 Sep;43(9):939-44	BACKGROUND: Barriers to colorectal cancer (CRC) screening are not well understood. OBJECTIVES: We sought to compare barriers to CRC screening reported by primary care physicians (PCPs) and by average-risk adults, and to examine characteristics of average-risk adults who identified lack of provider recommendation as a major barrier to CRC screening. RESEARCH DESIGN: This

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adults	N, Seeff LC, Brown ML		was a comparative study using data from the 1999-2000 Survey of Colorectal Cancer Screening Practices and the 2000 National Health Interview Survey (NHIS).SUBJECTS: We recruited nationally representative samples of PCPs (n= 1235) from the SCCSP and average-risk adults (n = 6497) from the NHIS. MEASURES: We measured barriers to CRC screening identified by PCPs and average-risk adults who were not current with screening. RESULTS: Both PCPs and average-risk adults identified lack of patient awareness and physician recommendation as key barriers to obtaining CRC screening. PCPs also frequently cited patient embarrassment/anxiety about testing and test cost/lack of insurance coverage, but few adults identified these as major barriers. Of adults not current with testing, those who had visited a doctor in the past year or had health insurance were more likely to report lack of physician recommendation as the main reason they were not up-to-date compared with their counterparts with no doctor visit or health insurance. Only 10% of adults not current with testing and who had a doctor visit in the past year reported receiving a screening recommendation. CONCLUSIONS: A need exists for continued efforts to educate the public about CRC and the important role of screening in preventing this disease. Practice-based strategies to systematically prompt health care providers to discuss CRC screening with eligible patients also are required.
The influence of health literacy on colorectal cancer screening knowledge, beliefs and behavior	Peterson NB, Dwyer KA, Mulvaney SA, Dietrich MS, Rothman RL	<i>J Natl Med Assoc.</i> 2007;99(10):1105– 12	OBJECTIVE: To determine if health literacy is associated with knowledge of colorectal cancer (CRC) and CRC screening tests, with perceived benefits and barriers to CRC screening, with perceived risk of CRC, with reported self-efficacy for completing CRC screening and with receipt of CRC tests. METHODS: A convenience sample of 99 subjects completed a health literacy assessment, the Rapid Estimate of Adult Literacy in Medicine (REALM) and a structured interview. RESULTS: Limited or inadequate health literacy was significantly associated with less knowledge about CRC and CRC screening and with more reported barriers to completing fecal occult blood testing (FOBT) and colonoscopy in multivariate analysis. Health literacy was not associated with perceived benefits or reported self-efficacy for completing FOBT or colonoscopy, with perceived risk of developing CRC or with completing CRC tests. However, our small sample size limited our power to detect differences. CONCLUSIONS: Patients with limited health literacy have less knowledge about CRC and CRC screening and report more barriers to completing FOBT and colonoscopy. Interventions to improve CRC screening should consider the health literacy of patients, especially when addressing barriers to screening. Future studies are needed to better define the role of health literacy in CRC screening.
Increasing attendance at colorectal cancer screening: Testing the efficacy of a mailed, psychoeducational intervention in a community sample of older adults.	Wardle J, Williamson S, McCaffery K, Sutton S, Taylor T, Edwards R, Atkin W	<i>Health Psychology.</i> 2003; 22(1) 99–105	This article describes a trial of a psychoeducational intervention designed to modify negative attitudes toward flexible sigmoidoscopy screening and thereby increase screening attendance. The intervention materials addressed the multiple barriers shown to be associated with participation in earlier studies. Adults ages 55-64 (N=2,966), in a "harder-to-reach" group were randomized either to receive an intervention brochure or to a standard invitation group. Attitudes and expectations were assessed by questionnaire, and attendance at the clinic was recorded. Compared with controls, the intervention group had less negative attitudes, anticipated a more positive experience, and had a 3.6% higher level of attendance. These results indicate that psychoeducational interventions can provide an effective means of modifying attitudes and increasing rates of screening attendance.

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Barriers to Screening: Cost and Insurance Status			
Increase in screening for colorectal cancer in older Americans: results from a national survey	Chen X, White MC, Peipins La, Seeff LC	<i>J Am Geriatr Soc.</i> 2008; 56(8):1511–6	<p>OBJECTIVES: To compare the proportions of the U.S. population aged 65 and older who underwent tests for colorectal cancer (CRC) in 2000 and 2005 to examine the effect of the change in Medicare reimbursement for screening colonoscopy that occurred in 2001.</p> <p>DESIGN: National population-based survey. SETTING: United States. PARTICIPANTS: A total of 6,035 respondents to the 2000 National Health Interview Survey (NHIS) and 5,490 respondents to the 2005 NHIS aged 65 and older. MEASUREMENTS: A questionnaire was used to assess self-reports of testing (colonoscopy, sigmoidoscopy, or home fecal occult blood test (FOBT)) for CRC. Estimates for the U.S. population were extrapolated from the survey results. To account for the complex sampling design, SUDAAN was used to calculate population sizes and proportions. RESULTS: In U.S. adults aged 65 and older, the proportion reporting up-to-date CRC testing increased from 39.5% in 2000 to 47.1% in 2005. By 2005, endoscopy had become more common than home FOBT for CRC screening in older adults. In 2000 and in 2005, a higher proportion of men than women were screened across all age groups and for all screening modalities. The proportion screened declined with older age. CONCLUSION: Substantial increases in CRC testing, particularly colonoscopy, followed changes in Medicare reimbursement for screening colonoscopy in adults aged 65 and older. Although nearly half of older adults were up to date with CRC tests, differences remained in the use of screening according to age and sex within this age group.</p>
Barriers to colorectal cancer screening among Medicare consumers	Klabunde CN, Schenk AP, Davis WW	<i>Am J Prev Med.</i> 2006;30(4):313–9	<p>BACKGROUND: Few studies have examined lack of physician recommendation and other reasons for under-utilization of colorectal cancer (CRC) screening in the Medicare population. METHODS: Data from a telephone survey conducted in 2001 in a random sample of Medicare consumers residing in North and South Carolina were used to examine barriers to CRC screening, focusing on consumers' reports of receiving a physician's recommendation to obtain CRC screening and reasons for not being screened. Analyses were restricted to respondents with no history of CRC (n = 1901). Descriptive statistics were used to characterize respondents' CRC screening status, receipt of a physician's recommendation for screening, and reasons for not being screened. Logistic regression modeling was used to examine factors associated with receiving a physician recommendation for fecal occult blood test, sigmoidoscopy, colonoscopy, any endoscopy, and any CRC test. RESULTS: Thirty-one percent of Medicare consumers had never been tested for CRC, and 18% had been tested but were not current with Medicare-covered intervals. Overall, 28% reported not receiving a physician recommendation for screening. Predictors of receiving a physician recommendation included sociodemographic (younger age, white race, more education), health status (increased CRC risk, comorbidity), and healthcare access (had a routine/preventive care visit in the past 12 months) factors. Lack of knowledge/awareness and the physician not ordering the test were commonly cited reasons for not having CRC tests. CONCLUSIONS: Colorectal cancer screening was under-utilized by Medicare consumers in two states, and lack of physician recommendation was an important contributing factor. Providing a benefit under the Medicare program does not ensure its widespread use by consumers or their physicians.</p>
Cost-effectiveness analyses of colorectal cancer screening	Pignone M, Saha S,	<i>Annals.</i> 2002;137(2): 96–104	<p>CONTEXT: Several methods of colorectal cancer screening appear to be effective in reducing disease-specific mortality, but the cost-effectiveness of different strategies is unclear. OBJECTIVE: To perform a systematic review of the cost-effectiveness of colorectal</p>

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	Hoerger T, Mandelblatt J		cancer screening for the U.S. Preventive Services Task Force (USPSTF). DATA SOURCES: We searched MEDLINE® and the British National Health Service Economic Evaluation Database from January 1993 through September 2001. STUDY SELECTION: We reviewed original economic evaluations of colorectal cancer screening in average-risk patients. We sought studies addressing the incremental cost-effectiveness of different screening strategies compared to no screening, of different screening strategies compared with one another, and of different ages of screening initiation and cessation. Two investigators independently reviewed each abstract, and potentially eligible articles were retrieved. A four-member working group reached consensus regarding final inclusion or exclusion of articles. RESULTS: Among 180 potential articles identified, seven were retained in our final analysis. Compared with no screening, cost-effectiveness ratios for screening with any of the commonly considered modalities were generally between \$10,000 and \$25,000 per life-year saved. No one strategy was consistently found to be the most effective or to have the best incremental cost-effectiveness ratio. Currently available models provided insufficient evidence to determine optimal starting and stopping ages for screening. CONCLUSIONS: Screening for colorectal cancer appears cost-effective compared with no screening but a single optimal strategy cannot be determined from the currently available data. Additional data regarding adherence with screening over time, complication rates in real-world settings, and colorectal cancer biology are needed. Additional analyses are necessary to determine optimal ages of initiation and cessation.
The role of health insurance coverage in cancer screening utilization	Robinson JM, Shavers V	J Health Care Poor Underserved. 2008;19(3):842–56	INTRODUCTION: Although previous studies have shown a correlation between health insurance coverage and cancer screening, underinsurance and cancer screening among racial/ethnic minorities has not been examined. METHODS: Data from the 2000 and 2003 National Health Interview Surveys are used in this analysis. Cross-tabulations, age, and racial/ethnic group stratified regression analyses are used to examine associations between health insurance status and receipt of mammography, Pap testing, prostate specific antigen tests, fecal occult blood test (FOBT) and colorectal endoscopy. RESULTS: In overall models, uninsurance was associated with lower receipt of all tests except FOBT among participants ages 65-85 years. Underinsurance was associated with lower receipt of mammography among women under 65 years only. CONCLUSION: These findings show age variation in the association between cancer screening and health insurance coverage. In addition, health insurance appears to act similarly across racial/ethnic groups. Further examination of underinsurance in cancer screening utilization and other health behaviors is needed.
Barriers to Screening and Strategies to Increase Screening Rates: Program Models			
Improving colorectal cancer screening in primary care practice: innovative strategies and future directions	Klabunde CN, Lanier D, Breslau ES, Zapka JG, Fletcher RH, Ransohoff	<i>J Gen Intern Med.</i> 2007;22(8):1195-205	Colorectal cancer (CRC) screening has been supported by strong research evidence and recommended in clinical practice guidelines for more than a decade. Yet screening rates in the United States remain low, especially relative to other preventable diseases such as breast and cervical cancer. To understand the reasons, the National Cancer Institute and Agency for Healthcare Research and Quality sponsored a review of CRC screening implementation in primary care and a program of research funded by these organizations. The evidence base for improving CRC screening supports the value of a New Model of Primary Care Delivery: 1. a team approach, in which responsibility for screening tasks is shared among other members of the practice, would help address physicians' lack of time for preventive care; 2. information systems can identify eligible patients and remind them when screening is

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	DF, Winawer SJ		due; 3. involving patients in decisions about their own care may enhance screening participation; 4. monitoring practice performance, supported by information systems, can help target patients at increased risk because of family history or social disadvantage; 5. reimbursement for services outside the traditional provider-patient encounter, such as telephone and e-mail contacts, may foster enhanced screening delivery; 6. training opportunities in communication, cultural competence, and use of information technologies would improve provider competence in core elements of screening programs. Improvement in CRC screening rates largely depends on the efforts of primary care practices to implement effective systems and procedures for screening delivery. Active engagement and support of practices are essential for the enormous potential of CRC screening to be realized.
How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Clinician's Evidence-Based Toolkit and Guide	Sarfaty M	2006 American Cancer Society website: www.cancer.org/ColonMD_Clinicians_Manual.pdf	This document provides a systematic approach designed to identify and provide screening recommendations for eligible patients visiting a primary care practice. Suggestions are provided that incorporate an assessment of patient risk level, local medical resources, insurance coverage plans, and patient preferences. Algorithms, flow sheets, and procedures are also provided.
Start-Up of the Colorectal Cancer Screening Demonstration Program	DeGroff A, Holden D, Goode Green S, Boehm J, Seeff C et al	http://www.cdc.gov/pcd/issues/2008/apr/07_0204.htm	In 2005, the Centers for Disease Control and Prevention funded five sites to implement the Colorectal Cancer Screening Demonstration Program (CRCSDP). An evaluation is being conducted that includes a multiple case study. Case study results for the start-up period, the time between initial funding and screening initiation, provide details about the program models and start-up process and reveal important lessons learned. The program models developed by the CRCSDP sites offer a range of prototypes. Case study results suggest benefits in employing a multidisciplinary staff team, assembling a medical advisory board, collaborating with local partners, using preexisting resources, designing programs that are easily incorporated into existing service delivery systems, and planning for adequate start-up time.
Improving colorectal cancer screening by using community volunteers: results of the Carolinas cancer education and screening (CARES) project	Katz ML, Tatum C, Dickinson SL, Murray DM, Long-Foley K, Cooper MR, Daven M, Paskett ED	<i>Cancer</i> . 2007 Oct 1;110(7):1602–10	BACKGROUND: The goal of the Carolinas Cancer Education and Screening (CARES) Project was to improve colorectal cancer (CRC) screening among low-income women in subsidized housing communities in 11 cities in North and South Carolina who were traditionally underserved by cancer control efforts. METHODS: Cross-sectional samples were randomly selected from housing authority lists at 5 timepoints in this nonrandomized community-based intervention study. Face-to-face interviews focused on CRC knowledge, beliefs, barriers to screening, and screening behaviors. The intervention components were based on a previous evidence-based program. RESULTS: A total of 2098 surveys were completed. Seventy-eight percent of the respondents were African American, 62% were 65+ years, and 4% were married. At baseline, the rate of CRC screening within guidelines was 49.3% and physician recommendation was the strongest predictor (odds ratio [OR] = 21.9) of being within guidelines. There was an increase in positive beliefs about CRC screening (P = .010) and in the intention to complete CRC screening in the next 12 months (P = .053) after the intervention. The odds of being within CRC screening guidelines for women living in a city that had received the intervention were

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			not significantly different from women living in a city that had not received the intervention (P = .496). CONCLUSIONS: Although CRC screening rates were not significantly better after the intervention, there was a positive change in beliefs about screening and intention to be screened. The results suggest that the dissemination of an evidence-based behavioral intervention may require a longer duration to engage hard-to-reach populations and change behaviors.
The impact of consumer-directed health plans and patient socioeconomic status on physician recommendations for colorectal cancer screening	Pollack CE, Mallva G, Polsky D	<i>J Gen Intern Med.</i> 2008 Oct; 23(10):1595–601	BACKGROUND: Consumer-directed health plans are increasingly common, yet little is known about their impact on physician decision-making and preventive service use. OBJECTIVE: To determine how patients' deductible levels and socioeconomic status may affect primary care physicians' recommendations for colorectal cancer screening. DESIGN, SETTING, AND PARTICIPANTS: Screening recommendations were elicited using hypothetical vignettes from a national sample of 1,500 primary care physicians. Physicians were randomized to one of four vignettes describing a patient with either low or high socioeconomic status (SES) and either low- or high-deductible plan. Bivariate and multivariate analyses were used to examine how recommendations varied as a function of SES and deductible. OUTCOME MEASURES: Rates of recommendation for home fecal occult blood testing, sigmoidoscopy, colonoscopy, and inappropriate screening, defined as no screening or office-based fecal occult blood testing. RESULTS: A total of 528 (49%) eligible physicians responded. Overall, 7.2% of physicians recommended inappropriate screening; 3.2% of patients with high SES in low-deductible plans received inappropriate screening recommendations and 11.4% of patients with low SES in high-deductible plans for an adjusted odds ratio of 0.22 (0.05-0.89). The odds of a colonoscopy recommendation were over ten times higher (AOR 11.46, 5.26-24.94) for patients with high SES in low-deductible plans compared to patients with low SES in high-deductible plans. Funds in medical savings accounts eliminated differences in inappropriate screening recommendations. CONCLUSIONS: Patient SES and deductible-level affect physician recommendations for preventive care. Coverage of preventive services and funds in medical savings accounts may mitigate impact of high-deductibles and SES on inappropriate recommendations.
Barriers to Screening Related to Race and Strategies to Increase Screening Rates			
A program to enhance completion of screening colonoscopy among urban minorities	Chen LA, Santos S, Jandorf L, et al	<i>Clin Gastroenterol Hepatol.</i> 2008; 6(4):443–50	BACKGROUND & AIMS: Although colonoscopy is becoming the preferred screening test for colorectal cancer, screening rates, particularly among minorities, are low. Little is known about the uptake of screening colonoscopy or the factors that predict colonoscopy completion among minorities. This study investigated the use of patient navigation within an open-access referral system and its effects on colonoscopy completion rates among urban minorities. METHODS: This was a cohort study that took place at a teaching hospital in New York. Participants were mostly African Americans and Hispanics directly referred for screening colonoscopy by primary care clinics from November 2003 to May 2006. Once referred, a bilingual Hispanic female patient navigator facilitated the colonoscopy completion. Completion rates, demographic factors associated with completing colonoscopy, endoscopic findings, and patient satisfaction were analyzed. RESULTS: Of 1169 referrals, 688 patients qualified for and 532 underwent navigation. Two thirds (66%) of navigated patients completed screening colonoscopies, 16% had adenomas, and only 5% had inadequate bowel preps. Women were 1.31 times more likely to complete the colonoscopy than men (P = .014). Hispanics were 1.67 times more likely to

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
			<p>complete the colonoscopy than African Americans (P = .013). Hispanic women were 1.50 times more likely to complete the colonoscopy than Hispanic men (P = .009). Patient satisfaction was 98% overall, with 66% reporting that they definitely or probably would not have completed their colonoscopy without navigation. CONCLUSIONS: By using a patient navigator, the majority of urban minorities successfully completed their colonoscopies, clinically significant pathology was detected, and patient satisfaction was enhanced. This approach may help increase adherence with screening colonoscopy efforts in other clinical settings.</p>
<p>Increasing colorectal cancer screening among African Americans. linking risk perception to interventions targeting patients, communities and clinicians</p>	<p>Ward SH, Lin K, Meyer B, et al</p>	<p><i>JNMA</i>.2008; 100(6):748–758</p>	<p>Studies of African Americans show distinct patterns of perceptions of CRC and CRC screening. Through an in-depth qualitative study with 55 urban, low-income African Americans age >40, Greiner et al. identified six major themes in screening perceptions that are consistent with HBM constructs of barriers and facilitators to screening. The key barriers identified were fear and knowledge-specifically, fear of cancer, the system and screening procedures, and lack of knowledge about screening. Other barriers included fatalism and mistrust. Key facilitators were hope and perceived accuracy, including perceptions of being hopeful about positive screening outcomes along with getting accurate tests (those perceived as most thorough). Greiner et al. emphasize that the hope and accuracy themes could be used to increase awareness with tailored educational messages and interventions designed to overcome perceived barriers. These findings parallel findings on barriers, in particular, reported by other investigators as noted below.</p> <p>Fears. Fears are often cited and include fears of embarrassment, pain and finding abnormalities. Greiner et al. also reported that some members of the African-American community often adopt a passive role and avoid medical care out of fear something might be wrong. They also noted a "culture of silence and avoidance" around cancer.</p> <p>Fatalistic beliefs. African Americans reportedly have fatalistic beliefs that reduce likelihood of screening Greiner et al. found two primary fatalistic beliefs: 1) once cancer has developed, there are no options for treatment or cure, and 2) surgery can spread the cancer. McAlearney et al. found that while about one-quarter of African Americans believed that CRC is not curable, many more (58%) perceived that people have no control over detecting the cancer early.</p> <p>Mistrust of healthcare system. Some African Americans mistrust the healthcare system. Greiner et al. found that some African Americans perceive physicians' failure to offer CRC screening or recommendations for what are perceived to be less-effective methods as subtle forms of racial discrimination. Some report fear of being used as "guinea pigs" to test unproven procedures. In comparing beliefs about CRC in African Americans who had undergone screening and those who had not, Palmer et al. found that the theme of distrust of the medical system emerged only in groups that had not completed CRC screening. Managed care, with its physician time limitations and reduced focus on patient wellness, has also been shown to be perceived by African Americans as a factor related to poor CRC screening rates. While African-American patients feel the need to be an advocate for their own care, without the appropriate knowledge base, this task can prove difficult.</p> <p>An ambitious intervention conducted by Campbell et al. called WATCH (Wellness for African Americans Through Churches) was aimed at improving nutrition, physical activity and CRC screening. The 12 predominantly African-American rural churches (with a total of 587 participants) in eastern North Carolina were randomized into four groups. Congregants: 1) received a series of four custom-tailored, personalized newsletters and videotapes using testimonials from community members and pastors emphasizing the</p>

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			importance of dietary changes, physical activity and CRC screening; 2) had 62 lay health advisors chosen from the congregations who were trained to counsel other congregants; 3) had a combined intervention of both the personalized education and lay health advisors or 4) were part of a control church which received health talks unrelated to CRC screening. All intervention groups increased their rates of FOBT screening. The video/newsletter intervention group increased screening from 19.7% at baseline to 36.8% at follow-up, an 87% increase. Changes in other groups were a59% Friedman et al. evaluated the efficacy of a videotaped intervention using peer educators and a health professional to increase compliance with FOBT screening among minority, low-income clients of an outpatient clinic compared to a control group randomized to receive usual care.31 While 41% (n=160) of intervention subjects completed FOBT screening, this was not statistically significantly different from the control group.
Perceived medical discrimination and cancer screening behaviors of racial and ethnic minority adults	Crawley LM, Ahn DK, Winkleby MA	<i>Cancer Epidemiol Biomarkers Prev.</i> 2008 Aug; 17(8):1937–44	BACKGROUND: Discrimination has been shown as a major causal factor in health disparities, yet little is known about the relationship between perceived medical discrimination (versus general discrimination outside of medical settings) and cancer screening behaviors. We examined whether perceived medical discrimination is associated with lower screening rates for colorectal and breast cancers among racial and ethnic minority adult Californians. METHODS: Pooled cross-sectional data from 2003 and 2005 California Health Interview Survey were examined for cancer screening trends among African American, American Indian/Alaskan Native, Asian, and Latino adult respondents reporting perceived medical discrimination compared with those not reporting discrimination (n = 11,245). Outcome measures were dichotomous screening variables for colorectal cancer among respondents ages 50 to 75 years and breast cancer among women ages 40 to 75 years. RESULTS: Women perceiving medical discrimination were less likely to be screened for colorectal [odds ratio (OR), 0.66; 95% confidence interval (95% CI), 0.64-0.69] or breast cancer (OR, 0.52; 95% CI, 0.51-0.54) compared with women not perceiving discrimination. Although men who perceived medical discrimination were no less likely to be screened for colorectal cancer than those who did not (OR, 1.02; 95% CI, 0.97-1.07), significantly lower screening rates were found among men who perceived discrimination and reported having a usual source of health care (OR, 0.30; 95% CI, 0.28-0.32). CONCLUSIONS: These findings of a significant association between perceived racial or ethnic-based medical discrimination and cancer screening behaviors have serious implications for cancer health disparities. Gender differences in patterns for screening and perceived medical discrimination warrant further investigation.
Racial differences in colorectal cancer screening practices and knowledge within a low-income population.	McAlearney AS, Reeves KW, Dickinson SL, Kelly KM, Tatum C, Katz ML, Paskett ED	<i>Cancer.</i> 2008; 112(2):391–8	BACKGROUND: Although colorectal cancer (CRC) is the third leading cause of cancer death among US women and is particularly deadly among African Americans, CRC screening rates remain low. Within a low-income population of women, the authors examined racial differences in practices, knowledge, and barriers related to CRC screening. METHODS: Face-to-face interviews were conducted with 941 women (white, n= 186; African American, n= 755) older than age 50 years who were living in subsidized housing communities in 11 cities in North and South Carolina. Women were asked questions about their CRC screening history and their knowledge and beliefs concerning CRC screening. RESULTS: Half (49%) of the women interviewed were within CRC screening guidelines, and this did not vary by race (P= .17). However, African American women were half as likely as white women to report having had a screening colonoscopy within the past 10 years (odds ratio [OR], 0.46; P< .001). Awareness of tests for CRC was low overall (39%) and was lower among African Americans than whites (OR, 0.44; P< .001). Compared with white women, African

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			American women were less likely to report embarrassment as a barrier (OR, 0.59; P= .008) and more likely to report lack of insurance coverage (OR, 1.75; P= .098). CONCLUSIONS: Efforts must continue to increase women's knowledge of both CRC screening tests and colon cancer risk factors. Among these low-income women, routine encounters with the healthcare system may present opportunities to reduce deficits in CRC knowledge and to improve overall CRC screening rates.
Perceived discrimination in health care and use of preventive health services	Hausmann LR, Jeong K, Bost JE, Ibrahim SA	<i>J Gen Intern Med</i> 2008; (10):1679–84	OBJECTIVE: To examine the relationship between perceived discrimination and preventive health care utilization. DESIGN AND PARTICIPANTS: Cross-sectional analysis using the 2004 Behavioral Risk Factor Surveillance System "Reactions to Race" module (N = 28,839). MEASUREMENTS: Outcomes were self-reported utilization of seven preventive health services. Predictors included perceived negative and positive racial discrimination (vs. none) while seeking health care in the past year. Multivariable models adjusted for additional patient characteristics. MAIN RESULTS: In unadjusted models, negative discrimination was significantly associated with less utilization of mammogram, pap test, PSA test, blood stool test, and sigmoidoscopy/colonoscopy (ORs = 0.53-0.73, p < .05), but not flu or pneumococcal vaccines (ORs = 0.76 and 0.84). Positive discrimination was significantly associated with more utilization of all services (ORs = 1.29-1.58, p < .05) except pap test (OR = 0.94). In adjusted models, neither negative nor positive discrimination was predictive of utilization, except for PSA test (positive discrimination OR = 1.33, p < .05). CONCLUSIONS: Perceived racial discrimination in health care does not independently predict preventive health care utilization.
Improving rates for screening colonoscopy: Analysis of the health information national trends survey (HINTS I) data	Geiger TM, Miedema BW, Geana MV, Thaler K, Rangnekar NJ, Cameron GT	<i>Surg Endosc.</i> 2008;22(2):527–33	BACKGROUND: Colonoscopy is an effective modality for colorectal cancer screening. The objectives of this study were to identify colorectal cancer knowledge and barriers to screening colonoscopy in the general US population. METHODS: Data was obtained from the health information national trends survey (HINTS I). The dataset (n = 6369) examined the influence of age, race, gender, education, income, media usage, and interactions with health care providers on knowledge, attitudes, and behavior regarding colonoscopic screening for colorectal cancer. RESULTS: The term 'colonoscopy' was recognized by 80% of participants (over the age of 35), however only 35% of respondents perceived it as a major method for colon cancer screening. Hispanics had the least awareness of colonoscopic screening (16% versus 39% non-Hispanic). Female gender, education, and income all correlated with knowledge and use of colonoscopic screening. There was a positive correlation between media usage and having a colonoscopy (r = 0.095, p < 0.01). Having a health care provider was strongly correlated with having undergone a colonoscopy (r = 0.249, p < 0.01). Reasons for not having a colonoscopy were 'no reason' (29%), 'doctor didn't order it' (24%), and 'didn't know I needed the test' (15%). Personalized materials were the preferred media for receiving cancer-related information. CONCLUSIONS: Knowledge of and participation in screening colonoscopy is low in the US population, especially among Hispanics. The most important immediate action is to increase physician referral for screening colonoscopy. Education materials focused on specific sociodemographic segments and targeted communication campaigns need to be developed to encourage screening.
Disparities in colorectal cancer screening: a guideline-based analysis of adherence	James TM, Greiner KA, Ellerbeck EF, Feng	<i>Ethn Dis.</i> 2006. 16(1):228–33	PURPOSE: This study's primary objective was to describe colorectal cancer (CRC) screening disparities using a guideline-derived definition of CRC screening adherence while controlling for confounding factors associated with CRC screening. METHODS: This secondary data analysis of the 2000 National Health Interview Survey (NHIS) included 12,677 individuals age > or = 50 years. The

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
	C, Ahluwalia JS		primary outcome assessed was adherence to CRC screening guidelines, defined as a sigmoidoscopy or proctoscopy within the last five years, colonoscopy within the last 10 years, or home fecal occult blood test within the last 12 months. Age, race/ethnicity, gender, physical disability, household income, insurance status, education level, marriage status, rural or urban geographic area, and family history of CRC were analyzed as covariates in a logistic regression model. We assessed the association between these sociodemographic variables and receipt of physician recommendation for CRC screening among those respondents not adherent to CRC screening recommendations. RESULTS: In the multivariate model, the odds for being adherent with current CRC screening recommendations were lower for Hispanics (odds ratio [OR] 0.71, 95% confidence interval [CI] 0.59-0.86) and African Americans (OR 0.82, 95% CI 0.71-0.95) than for Whites. Residents of urban areas had higher odds (OR 1.19, 95% CI 1.06-1.34) of being up-to-date than rural residents. Among subjects who were not up-to-date with CRC screening, similar disparities were noted in receipt of physician recommendation for CRC screening. CONCLUSIONS: Certain groups are at increased risk of not receiving CRC screening or recommendations for screening from their physicians. Interventions to reduce these disparities should be an integral part of overall efforts to improve CRC prevention and control.
Colorectal cancer prevention: adherence patterns and correlates of tests done for screening purposes within United States populations	Ata A, Elzey JD, Insaf TZ, Grau AM, Stain SC, Ahmed NU	<i>Cancer Detect Prev.</i> 2006;30(2):134–43	BACKGROUND: Studies exploring CRC testing prevalence and correlates within US populations have provided limited and sometimes conflicting information. The most recent national-level reports have described US usage of CRC tests but none have considered only those tests done specifically for screening reasons as an outcome variable. METHODS: Using the NHIS 2000 sample of ≥50 year-old, we assessed screening behavior using an outcome variable accounting for (1) any combination of recommended tests (2) done within their respective time guidelines, and (3) specifically for screening purposes. RESULTS: Only 25.8% (95% CI: 24.9-26.7%) of the population reported getting a test done for screening purposes within the recommended time. Most (>85%) of the FOBTs and only about 60% of endoscopies were done for screening. Among those who had an endoscopy within the recommended time, Blacks were more likely than Whites to report screening as the purpose of the test. Hispanics had the lowest test usage irrespective of test time, reason or type. Hispanics were 50% (p<0.001) less likely to be adherent, and Blacks approximately 22% (p<0.01) less likely to be adherent, than Whites. After multivariate adjustment, differences between Whites and Blacks disappeared; Hispanics remained less likely. Increasing education predicted higher adherence among Whites but only undergraduate completion did so among Blacks. Male gender predicted adherence only among Blacks and insurance only among Hispanics. CONCLUSIONS: Preventive screening for CRC is lower than estimates from previous studies. Future studies should consider accounting for test purpose. Our findings need confirmation through studies based on objective data.
Disparities in colorectal cancer screening rates among Asian Americans and non-Latino whites	Wong ST, Gildengorin G, Nguyen T, Mock J	<i>Cancer.</i> 2005;104(12 Suppl):2940–7	Among Asian Americans, colorectal cancer (CRC) is the second most commonly diagnosed cancer, and it is the third highest cause of cancer-related mortality. The 2001 California Health Interview Survey (CHIS 2001) was used to examine 1) CRC screening rates between different Asian-American ethnic groups compared with non-Latino whites and 2) factors related to CRC screening. The CHIS 2001 was a population-based telephone survey that was conducted in California. Responses about CRC screening were analyzed from 1771 Asian Americans age 50 years and older (Chinese, Filipino, South Asian, Japanese, Korean, and Vietnamese). The authors examined two CRC screening outcomes: individuals who ever had CRC screening and individuals who were up to date for

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
			<p>CRC screening. For CRC screening, fecal occult blood test (FOBT), sigmoidoscopy/colonoscopy, and any other form of screening were examined. CRC screening of any kind was low in all populations, and Koreans had the lowest rate (49%). Multivariate analysis revealed that, compared with non-Latino whites, Koreans were less likely to undergo FOBT (odds ratio [OR], 0.40; 95% confidence interval [95% CI], 0.25-0.62), and Filipinos were the least likely to undergo sigmoidoscopy/colonoscopy (OR, 0.62; 95% CI, 0.44-0.88) or to be up to date with screening (OR, 0.68; 95% CI, 0.48-0.97). Asian Americans were less likely to undergo screening if they were older, male, less educated, recent immigrants, living with ≥ 3 individuals, poor, or uninsured. Asian-American populations, especially Koreans and Filipinos, are under-screened for CRC. Outreach efforts could be more focused on helping Asian Americans to understand the importance of CRC screening, providing accurate information in different Asian languages. Other strategies for increasing CRC screening may include using a more family-centered approach and using qualified translators.</p>
<p>Improving multiple behaviors for colorectal cancer prevention among African-American church members. An intervention study to increase colorectal cancer knowledge and screening among community elders.</p>	<p>Powe BD, Ntekop E, Barron M</p>	<p><i>Public Health Nurs.</i> 2004;21(5):435–42</p>	<p>A five-part multimedia RCT intervention for predominately African-American members of senior centers that took a cultural approach. Fifteen senior centers were randomly assigned to one of three groups: a cultural and self-empowerment group, which received a video entitled "Telling the Story To Live Is God's Will," a calendar designed to address key points about CRC and provide key spiritual messages each month, a poster outlining the importance of getting checked for CRC, a brochure that went with the video and a flier on the FOBT procedure, all distributed over a nine-month period; a modified cultural group, which received a CRC video only; and a control group. Participants were primarily African-American females with a mean age of 73. Those who received the intervention in the cultural and self-empowerment group were most likely to complete FOBT screening (61%) at the end of 12 months compared to those in the modified intervention group (46%) and controls (15%).</p>
<p>Colorectal cancer screening among African American church members: a qualitative and quantitative study of patient–provider communication</p>	<p>Katz ML, James AS, Pignone MP, Hudson MA, Jackson E, Oates V, Campbell MK</p>	<p><i>BMC Public Health.</i> 2004;15:4:62</p>	<p>BACKGROUND: A healthcare provider's recommendation to undergo screening has been shown to be one of the strongest predictors of completing a colorectal cancer (CRC) screening test. We sought to determine the relationship between the general quality of self-rated patient-provider communication and the completion of CRC screening. METHODS: A formative study using qualitative data from focus groups and quantitative data from a cross-sectional survey of church members about the quality of their communication with their healthcare provider, their CRC risk knowledge, and whether they had completed CRC screening tests. Focus group participants were a convenience sample of African American church members. Participants for the survey were recruited by telephone from membership lists of 12 African American churches located in rural counties of North Carolina to participate in the WATCH (Wellness for African Americans Through Churches) Project. RESULTS: Focus Groups. Six focus groups (n = 45) were conducted prior to the baseline survey. Discussions focused on CRC knowledge, and perceived barriers/motivators to CRC screening. A theme that emerged during each groups' discussion about CRC screening was the quality of the participants' communication with their health care provider. Survey. Among the 397 participants over age 50, 31% reported CRC screening within the recommended guidelines. Participants who self-rated their communication as good were more likely to have been screened (36%) within the recommended guidelines than were participants with poor communication (17%) (OR = 2.8, 95% CI 1.2, 6.4; p = 0.013). Participants who had adequate CRC knowledge completed CRC screening at a higher rate than those with inadequate knowledge (p = 0.011). The</p>

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
			percentage of participants with CRC screening in the recommended guidelines, stratified by communication and knowledge group were: 42% for good communication/adequate knowledge; 27% for good communication/inadequate knowledge; 29% for poor communication/adequate knowledge; and 5% for poor communication/inadequate knowledge. CONCLUSIONS: Participants who rated their patient-provider communication as good were more likely to have completed CRC screening tests than those reporting poor communication. Among participants reporting good communication, knowledge about colorectal cancer was also associated with test completion. Interventions to improve patient-provider communication may be important to increase low rates of CRC screening test completion among African Americans.
Self-reported cancer screening rates versus medical record documentation: incongruence, specificity, and sensitivity for African American women	Powe BD, Cooper DL	<i>ONF</i> . 2008;35(2) http://ons.metapress.com/content/6131028418g178p9/?p=08bbf130415e44fa8f383d1fb0d2d200&pi=0	The women tended to overreport screenings in the past year when compared with medical records. The women's medical records indicated that many screenings reported as performed within the past two-five years had taken place more than five years ago. Implications for nursing: Nurses are in a unique position to educate women about cancer screening in a culturally and educationally appropriate way while ensuring that those conversations and procedures are documented in the medical record by all providers. Key points: <ul style="list-style-type: none"> • Low-income African American women had low rates of breast and colorectal cancer screening. • Self-reported cancer screening rates were incongruent with those documented in the medical record.
Patterns of colorectal cancer screening uptake among men and women in the United States	Meissner HI, Breen N, Klabunde CN, Vernon SW	<i>Cancer Epidemiol Biomarkers Prev</i> . 2006;15(2):389–94	OBJECTIVE: The purpose of this report is to examine (a) gender-specific correlates of colorectal cancer test use using recent national data from 2003 and (b) patterns of colorectal cancer screening by gender and test modality over time. METHODS: We analyze data from the 1987, 1992, 1998, 2000, and 2003 National Health Interview Surveys. Our sample consists of men and women > or = 50 years never diagnosed with colorectal cancer and who reported a recent fecal occult blood test and/or endoscopy. RESULTS: In 2003, both men and women reported higher rates of colonoscopy (32.2% and 29.8%, respectively) than use of FOBT (16.1% and 15.3%, respectively) or sigmoidoscopy (7.6% and 5.9%, respectively). Men reported higher use of endoscopy than women if they had a usual source of health care, had talked to a general doctor, and had two to five visits to the doctor in the past year. Men and women 65 years and older had higher rates of any recommended colorectal cancer test (55.8% and 48.5%, respectively) than persons 50 to 64 years (males, 41.0%; females, 31.4%). Use of colorectal cancer tests also was higher among both genders if they were not Hispanic, had higher educational attainment, were former smokers, had health insurance or a usual source of care, or if they talked to a general doctor. Recent use of colorectal cancer tests has increased since 2000 for both women and men largely due to increased use of colonoscopy. CONCLUSIONS: Colorectal cancer testing is increasing for both men and women, although the prevalence of testing remains higher in men. Our data support previous findings documenting socioeconomic disparities in colorectal cancer test use. Access barriers to screening could be particularly difficult to overcome if colonoscopy becomes the preferred colorectal cancer screening modality.

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Disparities despite coverage: gaps in colorectal cancer screening among Medicare beneficiaries	O'Malley AS, Forrest CB, Feng S, Mandelblatt J	<i>Arch Intern Med.</i> 2005;165(18):2129–35	<p>BACKGROUND: Despite its effectiveness in reducing mortality, colorectal cancer (CRC) screening rates are low, especially among low-income and minority groups; however, physician recommendation can increase screening rates. METHODS: We performed a multilevel analysis of the Medicare Current Beneficiary Survey data linked to Medicare claims and the Area Resource File to identify determinants of racial and socioeconomic disparities in CRC screening among 9985 Medicare Parts A and B beneficiaries with a usual physician. Recent CRC screening was defined as receipt of either a home fecal occult blood test, flexible sigmoidoscopy, or colonoscopy at recommended intervals. RESULTS: Unadjusted rates of screening were 48% for white and 39% for black beneficiaries ($P<.001$). Racial differences in CRC screening receipt were eliminated after adjustment for socioeconomic status as measured by income and education. Socioeconomic status disparities decreased but remained significant after adjustment for personal and health system factors. Awareness of CRC (adjusted odds ratio, 2.76; 95% confidence interval, 2.29-3.33) and having a primary care generalist (vs another specialist) as one's usual physician (adjusted odds ratio, 1.31; 95% confidence interval, 1.12-1.53) were associated with higher odds of screening, controlling for other factors. The odds of screening were also higher among those whose usual physician was rated more highly on information-giving skills. CONCLUSIONS: Racial differences in CRC screening rates among Medicare beneficiaries with a usual physician are explained by differences in socioeconomic status. Beneficiaries with a primary care generalist as their usual physician had higher rates of CRC screening receipt. Increased efforts to make Medicare beneficiaries aware of the benefits of CRC screening may capitalize on the associations found in this study between CRC knowledge, physician information giving, and timely screening.</p>
Colonoscopic screening of average-risk women for colorectal neoplasia	Schoenfeld P, Cash B, Flood A, Dobhan R, Eastone J, Coyle W et al	<i>N Engl J Med.</i> 2005;352(20):2061–8	<p>BACKGROUND: Veterans Affairs (VA) Cooperative Study 380 showed that some advanced colorectal neoplasias (i.e., adenomas at least 1 cm in diameter, villous adenomas, adenomas with high-grade dysplasia, or cancer) in men would be missed with the use of flexible sigmoidoscopy but detected by colonoscopy. In a tandem study, we examined the yield of screening colonoscopy in women. METHODS: To determine the prevalence and location of advanced neoplasia, we offered colonoscopy to consecutive asymptomatic women referred for colon-cancer screening. The diagnostic yield of flexible sigmoidoscopy was calculated by estimating the proportion of patients with advanced neoplasia whose lesions would have been identified if they had undergone flexible sigmoidoscopy alone. Lesions were considered detectable by flexible sigmoidoscopy if they were in the distal colon or if they were in the proximal colon in patients who had concurrent small adenomas in the distal colon, a finding that would have led to colonoscopy. The results were compared with the results from VA Cooperative Study 380 for age-matched men and women with negative fecal occult-blood tests and no family history of colon cancer. RESULTS: Colonoscopy was complete in 1463 women, 230 of whom (15.7 percent) had a family history of colon cancer. Colonoscopy revealed advanced neoplasia in 72 women (4.9 percent). If flexible sigmoidoscopy alone had been performed, advanced neoplasia would have been detected in 1.7 percent of these women (25 of 1463) and missed in 3.2 percent (47 of 1463). Only 35.2 percent of women with advanced neoplasia would have had their lesions identified if they had undergone flexible sigmoidoscopy alone, as compared with 66.3 percent of matched men from VA Cooperative Study 380 ($P<0.001$). CONCLUSIONS: Colonoscopy may be the preferred method of screening for colorectal cancer in women.</p>

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Colorectal cancer screening among Mexican Americans at a community clinic	Yepes-Rios M, Reimann JO, Talavera AC, Ruiz de Esparza A, Talavera GA	<i>Am J Prev Med.</i> 2006;30(3):204–10	<p>BACKGROUND: Mexican Americans tend to under-utilize colorectal cancer (CRC) prevention. Yet little is known about sociocultural factors associated with CRC screening. This study assessed predictors of three primary CRC tests among low-income Mexican Americans. METHODS: From May to December 2003, an availability sample of 287 patients, aged 50 to 89 years, who presented for routine care at a community health center near the U.S.-Mexico border completed surveys on CRC knowledge, awareness, attitudes toward screening, logistic barriers, perceptions of health, locus of control, acculturation, whether their doctor discussed CRC screening, and sociodemographics. Participants also reported whether they had ever had a fecal occult blood test, flexible sigmoidoscopy, or colonoscopy. Logistic regression identified predictors of having had these tests. RESULTS: Overall, 41% reported having ever had any of the three tests; 34.1% had a fecal occult blood test; 6.6%, flexible sigmoidoscopy; and 11.8%, colonoscopy. Few respondents reported any clear knowledge about CRC, and only 41% said their doctor had ever discussed screening with them. Yet "doctor discussed screening" is the only consistent screening predictor across tests. CRC knowledge (p=0.006) and insurance coverage (p=0.009) predicted having had a flexible sigmoidoscopy. Perceptions of general poor health also predicted having had a flexible sigmoidoscopy or a colonoscopy (p=0.04). Being employed marginally predicted whether patient had ever had any of the three tests (p=0.05). CONCLUSIONS: Results show that even those in contact with community medical services exhibit low CRC screening rates. They further suggest that interventions focused on clinical settings are an important first step toward CRC prevention in this community.</p>
Screening Efficacy and Findings: Colonoscopy			
Association of colonoscopy and death from colorectal cancer	Baxter NN, Goldwasser MA, Paszat LF, et al	<i>Annals.</i> 2009;150(1): 1-8	<p>Results: 10 292 case patients and 51 460 controls were identified; 719 case patients (7.0%) and 5031 controls (9.8%) had undergone colonoscopy. Compared with controls, case patients were less likely to have undergone any attempted colonoscopy (adjusted conditional odds ratio [OR], 0.69 [95% CI, 0.63 to 0.74; P < 0.001]) or complete colonoscopy (adjusted conditional OR, 0.63 [CI, 0.57 to 0.69; P < 0.001]). Complete colonoscopy was strongly associated with fewer deaths from left-sided CRC (adjusted conditional OR, 0.33 [CI, 0.28 to 0.39]) but not from right-sided CRC (adjusted conditional OR, 0.99 [CI, 0.86 to 1.14]).</p> <p>Limitation: Screening could not be differentiated from diagnostic procedures.</p> <p>Conclusion: In usual practice, colonoscopy is associated with fewer deaths from CRC. This association is primarily limited to deaths from cancer developing in the left side of the colon.</p>
How much does colonoscopy reduce colon cancer mortality?	David F. Ransohoff	<i>Annals.</i> 2009;150(1):50–52	<p>These concerns and the authors' results should make us worry that we might mislead our patients (and ourselves) by saying that colonoscopy reduces the risk for CRC death by 90% (14). Based on the considerations discussed earlier on case-control studies of sigmoidoscopy and RCTs of fecal occult blood testing (15–17) that show CRC mortality reduction after colonoscopy (done because of a positive fecal occult blood testing result), a reasonable estimate—and what we should probably tell our patients—might be closer to a 60% to 70% reduction of the risk for death from CRC with high-quality colonoscopy. A 60% to 70% mortality reduction is not as good as 90%, but it should not be considered disappointing. It would be remarkably high compared with screening for other types of</p>

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			<p>cancer, such as breast (with a 25% cancer mortality reduction at best) or prostate (with no proven cancer mortality reduction) cancer. Colonoscopy is an effective intervention, but, as Baxter and colleagues suggest (1), current evidence is indirect and does not support a claim of 90% effectiveness. Until we have better data, we can be grateful and optimistic to have a useful intervention to offer our patients, but we should be realistic and cautious when talking with them about the magnitude of both benefits and risks.</p>
Prevalence of colon polyps detected by colonoscopy screening in asymptomatic black and white patients	Lieberman DA, Holub JL, et al	<i>JAMA</i> . 2008;300(12):1417–22	Compared with white individuals, black men and women have a higher incidence and mortality from colorectal cancer and may develop cancer at a younger age. Colorectal cancer screening might be less effective in black individuals, if there are racial differences in the age-adjusted prevalence and location of cancer precursor lesions. OBJECTIVES: To determine and compare the prevalence rates and location of polyps sized more than 9 mm in diameter in asymptomatic black and white individuals who received colonoscopy screening. DESIGN, SETTING, AND PATIENTS: Colonoscopy data were prospectively collected from 67 adult gastrointestinal practice sites in the United States using a computerized endoscopic report generator between January 1, 2004, and December 31, 2005. CONCLUSION: Compared with white individuals, black men and women undergoing screening colonoscopy have a higher risk of polyps sized more than 9 mm, and black individuals older than 60 years are more likely to have proximal polyps sized more than 9 mm.
The prevalence rate and anatomic location of colorectal adenoma and cancer detected by colonoscopy in average-risk individuals aged 40-80 years	Strul H, Kariv R, Leshno M, Halak A, Jakubowicz M, Santo M, et al	<i>Am J Gastroenterol</i> . 2006;101(2):255–62	BACKGROUND: The role of screening colonoscopy for colorectal (CR) neoplasia in average-risk population, remains to be determined. OBJECTIVES: To evaluate the prevalence and anatomic location of CR adenoma and carcinoma and the morbidity of colonoscopy in individuals at average risk for CR cancer (CRC). METHODS: A retrospective prevalence study of subjects aged 40-80 yr, with no cancer-related symptoms, personal or family history of CR neoplasia, who underwent a colonoscopy. RESULTS: Enrolled were 1,177 persons; 183 aged 40-49 yr (young), 917 aged 50-75 yr, and 77 aged 76-80 yr (elderly). The prevalence of overall CR neoplasia, advanced neoplasia, and cancer was 20.9%, 6.3%, and 1.1%, respectively. In the 50-75 age group, the prevalence of overall adenoma, advanced neoplasia, and cancer was 21.3%, 6.7%, and 1.2%, respectively. Of the 206 neoplasia cases, 21-43% harbored proximal neoplasia beyond the reach of sigmoidoscopy, without distal lesions. Among the elderly, the prevalence of overall adenoma, advanced neoplasia, and cancer reached 26.0%, 14.3%, and 2.6%, respectively. In the young group, 9.8% had overall neoplasia, 1.1% had advanced adenoma, and none had CRC. Procedure-related morbidity rate was 0.1%, with no perforations, bleedings, or mortality. CONCLUSIONS: Screening colonoscopy in average-risk subjects demonstrated a considerable prevalence of CR neoplasia and proximal lesions beyond the reach of sigmoidoscopy. The morbidity rate was negligible. Primary screening colonoscopy should be considered in health programs for the average-risk population, beginning at the age of 50 yr. The significantly high rate of advanced and proximal neoplasia in the elderly, encourages the inclusion of healthy subjects aged 76-80 yr in future prospective studies.
Use of colonoscopy to screen asymptomatic adults for colorectal cancer	Lieberman DA, Weiss DG, Bond	<i>N Engl J Med</i> . 2000 Jul 20; 343(3):162–8	BACKGROUND AND METHODS: The role of colonoscopy in screening for colorectal cancer is uncertain. At 13 Veterans Affairs Medical Centers, we performed colonoscopy to determine the prevalence and location of advanced colonic neoplasms and the risk of advanced proximal neoplasia in asymptomatic patients (age range, 50 to 75 years) with or without distal neoplasia. Advanced colonic

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	JH, Ahnen DJ, Garewal H, Chejfec G		neoplasia was defined as an adenoma that was 10 mm or more in diameter, a villous adenoma, an adenoma with high-grade dysplasia, or invasive cancer. In patients with more than one neoplastic lesion, classification was based on the most advanced lesion. RESULTS: Of 17,732 patients screened for enrollment, 3196 were enrolled; 3121 of the enrolled patients (97.7 percent) underwent complete examination of the colon. The mean age of the patients was 62.9 years, and 96.8 percent were men. Colonoscopic examination showed one or more neoplastic lesions in 37.5 percent of the patients, an adenoma with a diameter of at least 10 mm or a villous adenoma in 7.9 percent, an adenoma with high-grade dysplasia in 1.6 percent, and invasive cancer in 1.0 percent. Of the 1765 patients with no polyps in the portion of the colon that was distal to the splenic flexure, 48 (2.7 percent) had advanced proximal neoplasms. Patients with large adenomas (> or = 10 mm) or small adenomas (< 10 mm) in the distal colon were more likely to have advanced proximal neoplasia than were patients with no distal adenomas (odds ratios, 3.4 [95 percent confidence interval, 1.8 to 6.5] and 2.6 (95 percent confidence interval, 1.7 to 4.1], respectively). However, 52 percent of the 128 patients with advanced proximal neoplasia had no distal adenomas. CONCLUSIONS: Colonoscopic screening can detect advanced colonic neoplasms in asymptomatic adults. Many of these neoplasms would not be detected with sigmoidoscopy.
Screening Efficacy and Findings: Fecal Occult Blood Tests			
Random comparison of guaiac and immunochemical fecal occult blood tests for colorectal cancer in a screening population	Van Rossum LG, Rijn AN, Laheji RJ, et al	<i>Gastroenterology</i> . 2008.35(1):82–90	I-FOBT and G-FOBT test compliance, specificity, and sensitivity rates were evaluated. 10,993 tests were returned: 4836 (46.9%) G-FOBTs and 6157 (59.6%) I-FOBTs. The participation rate difference was 12.7% (P < .01). Of G-FOBTs, 117 (2.4%) were positive versus 339 (5.5%) of I-FOBTs. The positivity rate difference was 3.1% (P < .01). Cancer and advanced adenomas were found, respectively, in 11 and 48 of G-FOBTs and in 24 and 121 of I-FOBTs. Differences in positive predictive value for cancer and advanced adenomas and cancer were, respectively, 2.1% (P = .4) and -3.6% (P = .5). Differences in specificities favor G-FOBT and were, respectively, 2.3% (P < .01) and -1.3% (P < .01). Differences in intention-to-screen detection rates favor I-FOBT and were, respectively, 0.1% (P < .05) and 0.9% (P < .01). Participation and detection rates for advanced adenomas and cancer were significantly higher for I-FOBT. G-FOBT significantly underestimates the prevalence of advanced adenomas and cancer in the screening population compared with I-FOBT.
Screening for colorectal cancer: a targeted, updated systematic review for the U.S. Preventive Services Task Force	Whitlock EP, Lin JS, Liles E, Beil TL, Fu R	<i>Annals</i> . November 2008;149(9):638–658	<p>Data Synthesis: Four fecal immunochemical tests have superior sensitivity (range, 61% to 91%), and some have similar specificity (97% to 98%), to the Hemoccult II fecal occult blood test (Beckman Coulter). Tradeoffs between superior sensitivity and reduced specificity occur with high-sensitivity guaiac tests and fecal DNA, with other important uncertainties for fecal DNA. In settings with sufficient quality control, CT colonography is as sensitive as colonoscopy for large adenomas and colorectal cancer. Uncertainties remain for smaller polyps and frequency of colonoscopy referral. We did not find good estimates of community endoscopy accuracy; serious harms occur in 2.8 per 1000 screening colonoscopies and are 10-fold less common with flexible sigmoidoscopy.</p> <p>Conclusion: Fecal tests with better sensitivity and similar specificity are reasonable substitutes for traditional fecal occult blood testing, although modeling may be needed to determine all tradeoffs. Computed tomographic colonography seems as likely as colonoscopy to detect lesions 10 mm or greater but may be less sensitive for smaller adenomas. Potential radiation-related harms, the effect of</p>

Article Title	Authors	Journal Citation, Organization, and/or URL	Synopsis
			extracolonic findings, and the accuracy of test performance of CT colonography in community settings remain uncertain. Emphasis on quality standards is important for implementing any operator-dependent colorectal cancer screening test.
Estimating key parameters in FOBT screening for colorectal cancer	Wu D, Erwin D, Rosner GL	<i>Cancer Causes Control.</i> 2009; 20(1):41–6	OBJECTIVES: The association between screening sensitivity, transition probability, and individual's age in FOBT for colorectal cancer are explored, for both males and females. METHODS: We apply the statistical method developed by Wu et al. [1] using the Minnesota colorectal cancer study group data, to make Bayesian inference for the age-dependent screening test sensitivity, the age-dependent transition probability from disease-free to preclinical state, and the sojourn time distribution, for both male and female participants in a periodic screening program. This gives us more information on the effectiveness of the fecal occult blood test in colorectal cancer detection. RESULTS: The sensitivity appears to increase with age for both genders. However, the posterior mean sensitivity is not monotonic with age for males; it has a peak around age 74. The standard errors of the sensitivity are not monotone either; there is a minimum at age 69 for males and at age 78 for females. The age-dependent transition probability is not a monotone function of age; it has a single maximum at age 72 for males and a single maximum at age 75 for females. The age dependency seems more dramatic for females than for males. The posterior mean sojourn time is 4.08 years for males and 2.41 years for females, with a posterior median of 1.66 years for males and 1.88 years for females. The 95% highest posterior density (HPD) interval is (0.97, 20.28) for males and (1.15, 5.96) for females, which are very large ranges, especially for males. The reason might be that there were fewer men than women in the annual screening program. CONCLUSION: Reliable estimates of age-dependent sensitivity and transition probability are of great value to policy-makers regarding the initial age for colorectal cancer screening exams. We found that the mean sojourn time for males is much longer than that for females, which may imply that FOBT screening for colorectal cancer may be more effective for males than for females.
Screening for colorectal cancer saves lives	Constantini AS, Martini A, Puliti D, et al	<i>JNCI.</i> 2008; 100(24):1818–1821	Several randomized trials have demonstrated the efficacy of colorectal cancer screening by the fecal occult blood test in reducing colorectal cancer mortality, but an evaluation of population-based screening programs is still lacking. We compared the colorectal cancer mortality rates (both adjusted rates and 3-year moving average rates) during 1985–2006 for two geographic areas in the provinces of Florence and Prato in the Tuscany region of Italy that began active population-based screening for colorectal cancer at different times: the Empolese–Mugello district, in the early 1980s, and the rest of the Florence and Prato provinces, in early 2000. A log-linear Poisson model was used to estimate the annual percent change in mortality and to examine whether geographic area modified the effect of calendar year on it. The Empolese–Mugello district had a greater decrease in colorectal cancer mortality than the rest of the Florence and Prato provinces (estimated annual percent change in age-adjusted colorectal cancer mortality rate, 2.7% decrease per year [95% confidence interval {CI} = 1.7% to 3.7%] vs 1.3% decrease per year [95% CI = 0.8% to 1.7%], respectively). The interaction between calendar period and area was statistically significant ($P < .001$). Our results support the hypothesis that the implementation of colorectal cancer screening in the early 1980s in the Empolese–Mugello district, where approximately 17 500 people were tested each year with the fecal occult blood test, was associated with a larger reduction in colorectal cancer mortality than that observed in the rest of Florence and Prato provinces, where screening started 15–20 years later and where approximately 38 000 people were screened each year beginning in 2000.

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Screening for colorectal neoplasms with new fecal occult blood tests: update on performance characteristics	Allison JE, Sakoda LC, Levin TR, Tucker JP, Tekawa IS, Cuff T, et al	<i>J Natl Cancer Inst.</i> 2007; 99(19):1462–70	<p>BACKGROUND: One type of fecal occult blood test (FOBT), the unrehydrated guaiac fecal occult blood test (GT), is recommended by the United States Preventive Services Task Force and the Institute of Medicine for use in screening programs, but it has relatively low sensitivity as a single test for detecting advanced colonic neoplasms (cancer and adenomatous polyps > or = 1 cm in diameter). Thus, improving the sensitivity of FOBT should make colon cancer screening programs that use these tests more effective.</p> <p>METHODS: We assessed prospectively the performance characteristics of two newer FOBTs in 5841 subjects at average risk for colorectal cancer in a large group-model managed care organization. The tests evaluated included a sensitive GT, a fecal immunochemical test (FIT), and the combination of both tests. Patients with positive and negative test results were advised to have colonoscopy and sigmoidoscopy, respectively. Sensitivity and specificity for detecting advanced neoplasms in the left colon within 2 years after the FOBT screening were evaluated for the two tests administered separately and in combination. RESULTS: A total of 139 patients were diagnosed with advanced colorectal neoplasms (n = 14 cancers, n = 128 adenomas) within the 2 years following their initial FOBT screening. Sensitivity for detecting cancer was 81.8% (95% confidence interval [CI] = 47.8% to 96.8%) for the FIT alone and 64.3% (95% CI = 35.6% to 86.0%) for the sensitive GT and the combination test. Sensitivity for detecting advanced colorectal adenomas was 41.3% (95% CI = 32.7% to 50.4%) for the sensitive GT, 29.5% (95% CI = 21.4% to 38.9%) for the FIT, and 22.8% (95% CI = 16.1% to 31.3%) for the combination test. Specificity for detecting cancer and adenomas was 98.1% (95% CI = 97.7% to 98.4%) and 98.4% (95% CI = 98.0% to 98.7%), respectively, for the combination test; 96.9% (95% CI = 96.4% to 97.4%) and 97.3% (95% CI = 96.8% to 97.7%), respectively, for the FIT; and 90.1% (95% CI = 89.3% to 90.8%) and 90.6% (95% CI = 89.8% to 91.4%), respectively, for the sensitive GT. CONCLUSIONS: The FIT has high sensitivity and specificity for detecting left-sided colorectal cancer, and it may be a useful replacement for the GT.</p>
Performance characteristics and comparison of two fecal occult blood tests in patients undergoing colonoscopy	Cruz-Correa M, Schultz K, Jagannath S, Harris M, Kantsevov S, Bedine M	<i>Dig Dis Sci.</i> 2007 Apr;52(4):1009–13	<p>We investigated the use of a new type of FOBT (EZ-Detect) that uses the blood's pseudo-peroxidase activity as an enzymatic catalyst, in a one-step chromogen-substrate system performed by the patient. Asymptomatic patients >=50 years old received three Hemoccult II (HO) cards and three EZ-Detect (EZ) packages to be used in three consecutive bowel movements. Sensitivity, specificity, positive predictive value, and negative predictive value for detection of colorectal neoplasia was calculated. The study included 207 patients, with a mean age of 58.9 years. Diagnostic accuracy for detection of adenomas was similar for the EZ and HO tests (66.7% vs. 71.0%; P=0.48), while for advanced adenomas diagnostic accuracy for the EZ and HO tests was 86.0% vs. 94.2% (P=0.01), respectively. Most patients preferred the EZ test (92% vs. 8%). We conclude that the EZ test has a diagnostic profile similar to that of the HO test for identification of adenomas; however, for advanced adenomas the diagnostic accuracy was slightly better for the HO. The EZ test was preferred by most patients, which may increase colorectal cancer screening compliance.</p>
Cochrane systematic review of colorectal cancer screening using the fecal occult blood test (hemoccult): an update	Hewitson P, Glasziou P, Watson E, Towler B, Irwig L	<i>Am J Gastroenterol.</i> 2008 Jun;103(6):1541–9	<p>BACKGROUND AND AIMS: Reducing mortality from colorectal cancer (CRC) may be achieved by the introduction of population-based screening programs. The aim of the systematic review was to update previous research to determine whether screening for CRC using the fecal occult blood test (FOBT) reduces CRC mortality and to consider the benefits, harms, and potential consequences of screening. METHODS: We searched eight electronic databases (Cochrane Library, MEDLINE, EMBASE, CINAHL, PsychINFO, AMED, SIGLE, and HMIC). We identified nine articles describing four randomized controlled trials (RCTs) involving over</p>

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			<p>320,000 participants with follow-up ranging from 8 to 18 yr. The primary analyses used intention to screen and a secondary analysis adjusted for nonattendance. We calculated the relative risks and risk differences for each trial, and then overall, using fixed and random effects models. RESULTS: Combined results from the four eligible RCTs indicated that screening had a 16% reduction in the relative risk (RR) of CRC mortality (RR 0.84, 95% confidence interval [CI] 0.78-0.90). There was a 15% RR reduction (RR 0.85, 95% CI 0.78-0.92) in CRC mortality for studies that used biennial screening. When adjusted for screening attendance in the individual studies, there was a 25% RR reduction (RR 0.75, 95% CI 0.66-0.84) for those attending at least one round of screening using the FOBT. There was no difference in all-cause mortality (RR 1.00, 95% CI 0.99-1.02) or all-cause mortality excluding CRC (RR 1.01, 95% CI 1.00-1.03). CONCLUSIONS: The present review includes seven new publications and unpublished data concerning CRC screening using FOBT. This review confirms previous research demonstrating that FOBT screening reduces the risk of CRC mortality. The results also indicate that there is no difference in all-cause mortality between the screened and nonscreened populations.</p>
Sensitivity of immunochemical fecal occult blood test to small colorectal adenomas	Morikawa T, Kato J, Yamaji Y, Wada R, Mitsushima T, Sakaguchi K, et al	<i>Am J Gastroenterol.</i> 2007 Oct;102(10):2259–64	<p>BACKGROUND: Although the immunochemical fecal occult blood test (FOBT) is reportedly more sensitive to large adenomas or colorectal cancer (CRC) than the guaiac-based FOBT, the sensitivity of the immunochemical FOBT to small adenomas has scarcely been reported. Previous reports have indicated that the guaiac-based FOBT can detect small adenomas only by serendipity. OBJECTIVES: To investigate the sensitivity of immunochemical FOBT to small adenomas using a large-scale cohort. METHODS: We analyzed 21,805 consecutively enrolled asymptomatic persons who underwent colonoscopy and immunochemical FOBT. RESULTS: The sensitivity to adenomas \leq9 mm was significantly higher than the false-positive rate as revealed by analysis of all eligible subjects (7.0%vs 4.5%, $P < 0.001$). In men, the sensitivity was superior to the false-positive rate and increased with age (<50 yr 6.1% and >60 yr 11.3%). On the other hand, the sensitivity in women was not significantly different from the false-positive rate in any generation (5.1%vs 4.7% for all eligible women, $P= 0.72$). CONCLUSIONS: Immunochemical FOBT detected a small percentage of small adenomas in men at a rate that is significantly higher than the false-positive rate. Studies comparing the guaiac and immunochemical FOBTs using the end point of CRC-related death are expected.</p>
A national survey of primary care physicians' methods for screening for fecal occult blood	Nadel MR, Shapiro JA, Klabunde CN, Seeff LC, Uhler R, Smith RA, Ransohoff DF	<i>Ann Intern Med.</i> 2005 Jan 18;142(2):86–94	<p>BACKGROUND: Screening with the fecal occult blood test (FOBT) has been shown to reduce colorectal cancer incidence and mortality in randomized, controlled trials. Although the test is simple, implementation requires adherence to specific techniques of testing and follow-up of abnormal results. OBJECTIVE: To examine how FOBT and follow-up are conducted in community practice across the United States. DESIGN: Cross-sectional national surveys of primary care physicians and the public. SETTING: The Survey of Colorectal Cancer Screening Practices in Health Care Organizations and the 2000 National Health Interview Survey. PARTICIPANTS: 1147 primary care physicians who ordered or performed FOBT and 11 365 adults 50 years of age or older who responded to questions about FOBT use. MEASUREMENTS: Self-reported data on details of FOBT implementation and follow-up of positive results. RESULTS: Although screening guidelines recommend home tests, 32.5% (95% CI, 29.8% to 35.3%) of physicians used only the less accurate method of single-sample in-office testing; another 41.2% (CI, 38.3% to 44.0%) used both types of test. Follow-up of positive test results showed considerable nonadherence to guidelines, with 29.7% (CI, 27.1% to 32.4%) of physicians recommending repeating FOBT. Furthermore, sigmoidoscopy, rather than total colon examination, was commonly recommended to</p>

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			work up abnormal findings. Nearly one third of adults who reported having FOBT said they had only an in-office test, and nearly one third of those who reported abnormal FOBT results reported no follow-up diagnostic procedures. Limitations: The study was based on self-reports. Data from the National Health Interview Survey may underestimate the prevalence of in-office testing and inadequate follow-up. CONCLUSIONS: Mortality reductions demonstrated with FOBT in clinical trials may not be realized in community practice because of the common use of in-office tests and inappropriate follow-up of positive results. Education of providers and system-level interventions are needed to improve the quality of screening implementation.
Screening Efficacy and Findings: Flexible Sigmoidoscopy			
Risk of proximal and distal colorectal cancer following flexible sigmoidoscopy: a population-based cohort study	Rabeneck L, Lewis JD, Paszat LF, Saskin R, Stukel TA	<i>Am J Gastroenterol.</i> 2008 Aug; 103(8):2075–82	OBJECTIVES: Little is known about the risk of proximal and distal colorectal cancer (CRC) following flexible sigmoidoscopy (FS) in usual clinical practice. Our objective was to estimate the annual incidence of CRC within 7 yr following FS and to identify factors associated with incident CRC in those with a negative FS. METHODS: In this population-based retrospective cohort study, we included men and women 50-80 yr of age who had a negative or positive FS during 1996-1998 in Ontario. We followed each individual through December 31, 2005 and calculated the age- and sex-standardized incidence rates (SIRs) and 95% confidence intervals (CIs) for distal and proximal CRC. We compared the relative rate (RR) and 95% CIs of incident CRC between the negative and positive FS cohorts and the remaining Ontario population. Cox models were used to evaluate factors associated with incident cancers. RESULTS: The RR for distal CRC was significantly lower among those with a negative FS than in the Ontario population during each year of follow-up except the first year. For example, at 7 yr, the SIR for distal CRC following negative FS was 0.74 cancers/1,000 persons (95% CI 0.46-1.13) compared with 1.07/1,000 (95% CI 1.02-1.11) in the Ontario population (RR = 0.69, 95% CI 0.40-0.99). The RR for proximal CRC, except for year 2, did not differ between the negative FS cohort and the Ontario population during follow-up. In the positive FS cohort, the RR for distal CRC was significantly higher in the first year of follow-up compared with the Ontario population, but not thereafter. The results were similar for the RR for proximal CRC in the positive FS cohort. Only age was significantly associated with incident CRC following negative FS. CONCLUSIONS: Following negative FS, the incidence of distal but not proximal CRC was reduced for up to 7 yr. Following a positive FS, the incidence of distal and proximal cancer after the first year of follow-up did not differ from the Ontario population. The benefit of FS was confined to the distal colon, emphasizing the potential limitation of FS in practice.
Colon pathology detected after a positive screening flexible sigmoidoscopy: a prospective study in an ethnically diverse cohort	Francois FP, Bini EJ	<i>Am J Gastroenterol.</i> 2006 Apr; 101(4):823–30	OBJECTIVES: Although the association between distal neoplasia on sigmoidoscopy and proximal colonic pathology on follow-up colonoscopy has been well-described, it is not known if these findings are consistent across ethnic groups. The aim of this study was to evaluate ethnic variations in the prevalence of proximal neoplasia on follow-up colonoscopy after a neoplastic lesion is found on sigmoidoscopy. METHODS: Consecutive asymptomatic patients at average-risk for colorectal cancer who were referred for screening flexible sigmoidoscopy were prospectively enrolled. Colonoscopy was recommended for all patients with a polyp on flexible sigmoidoscopy, regardless of size. Advanced neoplasms were defined as adenomas > or = 10 mm in diameter or any adenoma, regardless of size, with villous histology, high-grade dysplasia, or cancer. RESULTS: Among the 2,207 patients who had sigmoidoscopy, 970 were Caucasian, 765 were African American, 395 were Hispanic, and 77 were Asian. The prevalence of

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			neoplasia in the distal colon was 12.6% in Caucasians, 11.2% in African Americans, 15.9% in Hispanics, and 24.7% in Asians (p = 0.002). Of the 290 patients with neoplastic lesions on sigmoidoscopy, follow-up colonoscopy identified neoplasms in the proximal colon in 63.9% of Caucasians, 59.3% of African Americans, 66.7% of Hispanics, and 26.3% of Asians (p = 0.01). Advanced neoplasms in the proximal colon were highest in African Americans (34.9%) and lowest in Asians (10.5%). CONCLUSIONS: In our study population, Asians demonstrated a higher prevalence of distal colonic neoplasia and a lower prevalence of proximal colonic neoplasia compared to non-Asians. Future studies should explore ethnic variation in colonic neoplasia prevalence and location since ethnic variation could lead to tailored colorectal cancer screening strategies.
Screening Efficacy and Findings: Combinations			
Use of colorectal cancer tests—United States, 2002, 2004, and 2006	Centers for Disease Control and Prevention (CDC)	<i>MMWR Morb Mortal Wkly Rep.</i> 2008 Mar 14;57(10):253-8	Colorectal cancer is the second-leading cause of cancer-related deaths in the United States among cancers that affect both men and women. The U.S. Preventive Task Force and other national organizations recommend that persons aged > or =50 years at average risk be screened for colorectal cancer using one or more of the following methods: fecal occult blood testing (FOBT) every year, sigmoidoscopy or double-contrast barium enema every 5 years, or colonoscopy every 10 years. To estimate rates of use of colorectal cancer tests and to evaluate changes in test use, CDC compared data from the 2002, 2004, and 2006 Behavioral Risk Factor Surveillance System (BRFSS) surveys. This report describes the results of that comparison, which indicated that the proportion of respondents aged > or =50 years reporting use of FOBT and/or sigmoidoscopy or colonoscopy increased overall from 2002 to 2006; however, certain populations, such as racial/ethnic minorities and those who reported no health insurance coverage, had lower prevalence of testing. Specific measures to increase colorectal cancer screening and address disparities in screening are needed.
Effectiveness of complete diagnostic examination in clinical practice settings	Jimbo M, Meyer B, Hyslop T, Cocroft J, Turner BJ, Weinberg DS, Myers RE	<i>Cancer Detect Prev.</i> 2006;30(6):545–51	BACKGROUND: Thorough follow-up of a positive fecal occult blood test (FOBT) result, or a complete diagnostic evaluation (CDE), is recommended as routine care on the basis of findings from colorectal cancer (CRC) screening trials. CDE involves either colonoscopy or the combination of flexible sigmoidoscopy and double contrast barium enema X-ray. However, little evidence outside clinical screening trial settings has been reported in the literature to support CDE performance. The focus of this study was to determine the impact of CDE in primary care practice settings. METHODS: We determined diagnostic outcomes for 461 adult patients with a positive FOBT result in 318 primary care practices in southeastern Pennsylvania and southern New Jersey. Sociodemographic data were collected and CDE status was ascertained for these patients. Polytomous logistic models were used to identify whether having CDE was associated with subsequently being diagnosed with lower gastrointestinal "neoplastic disease" or "other gastrointestinal disease" as compared to "normal findings. RESULTS: Patients who underwent CDE were significantly more likely to have a reported diagnosis of colorectal neoplasia than normal findings (adjusted odds ratio = 3.65, 95% confidence interval = 1.58-8.39, p = 0.02). CDE performance did not result in the differential diagnosis of other gastrointestinal disease. CONCLUSIONS: Patients with a positive screening FOBT who underwent CDE were more likely to be diagnosed with colorectal neoplasia than with less serious conditions or have normal findings. Results support the use of CDE in CRC screening.

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Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the U.S. Multisociety Task Force on Colorectal Cancer, and the American College of Radiology	Levin B, Lieberman D, McFarland B, Smith R, Brooks D, Andrews K, et al	<i>CA Cancer J Clin</i> 2008 May–Jun; 58(3):130–60	In the United States, colorectal cancer (CRC) is the third most common cancer diagnosed among men and women and the second leading cause of death from cancer. CRC largely can be prevented by the detection and removal of adenomatous polyps, and survival is significantly better when CRC is diagnosed while still localized. In 2006 to 2007, the American Cancer Society, the US Multi Society Task Force on Colorectal Cancer, and the American College of Radiology came together to develop consensus guidelines for the detection of adenomatous polyps and CRC in asymptomatic average-risk adults. In this update of each organization's guidelines, screening tests are grouped into those that primarily detect cancer early and those that can detect cancer early and also can detect adenomatous polyps, thus providing a greater potential for prevention through polypectomy. When possible, clinicians should make patients aware of the full range of screening options, but at a minimum they should be prepared to offer patients a choice between a screening test that is effective at both early cancer detection and cancer prevention through the detection and removal of polyps and a screening test that primarily is effective at early cancer detection. It is the strong opinion of these 3 organizations that colon cancer prevention should be the primary goal of screening.
Interventions to increase recommendation and delivery of screening for breast, cervical, and colorectal cancers by healthcare providers systematic reviews of provider assessment and feedback and provider incentives	Sabatino SA, Habarta N, Baron RC, Coates RJ, Rimer BK, Kerner J, Coughlin SS, et al	<i>Am J Prev Med.</i> 2008 Jul;35(1 Suppl):S67–74	Most major medical organizations recommend routine screening for breast, cervical, and colorectal cancers. Screening can lead to early detection of these cancers, resulting in reduced mortality. Yet not all people who should be screened are screened, either regularly or, in some cases, ever. This report presents results of systematic reviews of effectiveness, applicability, economic efficiency, barriers to implementation, and other harms or benefits of two provider-directed intervention approaches to increase screening for breast, cervical, and colorectal cancers. These approaches, provider assessment and feedback, and provider incentives encourage providers to deliver screening services at appropriate intervals. Evidence in these reviews indicates that provider assessment and feedback interventions can effectively increase screening by mammography, Pap test, and fecal occult blood test. Health plans, healthcare systems, and cancer control coalitions should consider such evidence-based findings when implementing interventions to increase screening use. Evidence was insufficient to determine the effectiveness of provider incentives in increasing use of any of these tests. Specific areas for further research are suggested in this report, including the need for additional research to determine whether provider incentives are effective in increasing use of any of these screening tests, and whether assessment and feedback interventions are effective in increasing other tests for colorectal cancer (i.e., flexible sigmoidoscopy, colonoscopy, or double-contrast barium enema).
Recommendations and rationale; screening for colorectal cancer	U.S. Preventive Services Task Force (USPSTF)	http://www.ahrq.gov/clinic/3rduspstf/colorectal/colorr.htm	The USPSTF found fair to good evidence that several screening methods are effective in reducing mortality from colorectal cancer. The USPSTF concluded that the benefits from screening substantially outweigh potential harms, but the quality of evidence, magnitude of benefit, and potential harms vary with each method. There are insufficient data to determine which strategy is best in terms of the balance of benefits and potential harms or cost-effectiveness. Studies reviewed by the USPSTF indicate that colorectal cancer screening is likely to be cost-effective (less than \$30,000 per additional year of life gained) regardless of the strategy chosen. It is unclear whether the increased accuracy of colonoscopy compared with alternative screening methods (for example, the identification of lesions that FOBT and flexible sigmoidoscopy would not detect) offsets the procedure's additional complications, inconvenience, and costs.

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Colorectal cancer test use from the 2005 National Health Interview Survey	Shapiro JA, Seeff LC, Thompson TD, Nadel MR, Klabunde CN, Vernon SW	<i>Cancer Epidemiol Biomarkers Prev.</i> 2008 Jul; 17(7):1623–30	<p>BACKGROUND: Screening is effective in reducing colorectal cancer mortality. Recommended colorectal cancer screening options include a home fecal occult blood test (FOBT) or colorectal endoscopy (sigmoidoscopy or colonoscopy). Past surveys have indicated that colorectal cancer screening prevalence in the United States is low. The purpose of this analysis was to determine the prevalence of colorectal cancer test use in the United States by various factors and to examine reasons for not having a colorectal cancer test.</p> <p>METHODS: Data on respondents ages > or =50 years from the 2005 National Health Interview Survey (n = 13,269) were analyzed. The proportion of the U.S. population that had home FOBT within the past year or endoscopy within the past 10 years was examined by sociodemographic, health-care access, and other health-related factors. Reported reasons for not having FOBT or endoscopy were also analyzed.</p> <p>RESULTS: The age-standardized proportion of respondents who reported FOBT within the past year and/or endoscopy within the past 10 years was 50.0% [95% confidence interval (95% CI), 48.8-51.2]. Colorectal cancer testing rates were particularly low among people without health-care coverage (24.1%; 95% CI, 19.2-29.7) or without a usual source of health care (24.7%; 95% CI, 20.8-29.0). The most commonly reported reason for not having a colorectal cancer test was "never thought about it."</p> <p>CONCLUSIONS: In 2005, about half of Americans ages > or =50 years did not have appropriate colorectal cancer testing. Increased efforts to expand health-care coverage or to provide colorectal cancer tests to people without health-care coverage are needed to increase colorectal cancer screening.</p>

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