ABSTRACT  A recommendation from a physician is the most influential factor in determining whether a patient is screened for colorectal cancer. While the vast majority of primary care physicians report that they screen for colorectal cancer, many patients do not receive the recommendation they need. Evidence-based strategies can help the physician ensure that every appropriate patient leaves the office with the needed recommendation. Choosing an office system that can be implemented by the physician or office staff can fuel efforts to achieve higher screening rates. Reminder systems, tracking systems, communication strategies, and policies that reinforce use of evidence-based guidelines may contribute. (CA Cancer J Clin 2007;57:354–366.) © American Cancer Society, Inc., 2007.

How to Increase Colorectal Cancer Screening Rates in Practice

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INTRODUCTION

A recommendation from a physician is the most influential factor in determining whether a patient is screened for colorectal cancer (CRC). Although other factors such as health insurance status play a role, the evidence supporting the vital role of a physician’s recommendation derives from many types of research-based and population sources and is geographically constant.1–5 A recommendation from a primary care clinician has been identified most consistently as the factor of prime influence.

Colorectal cancer is the nation’s second leading cause of cancer mortality.6 It is also one of its most preventable cancers: if adenomatous polyps detected by screening were removed before they transformed into cancers, starting at age 50 years for those at average risk and earlier for those at increased risk, a precipitous drop in new CRCs and in related mortality would follow. Increased adherence to colorectal screening guidelines would also detect cancers at earlier stages, increase survival, and reduce mortality rates.7–9

Physicians are increasingly aware of the importance of screening to reduce mortality from CRC. In fact, 98% of primary care physicians responding to a national survey reported that they screen for CRC.10 While this is encouraging, many patients do not receive the needed recommendation when they visit their doctor.11,12 But most of them could.

The gap between physician intent to screen and actual practice of screening results primarily from inadequate use of office systems.13–16 These office systems are intended to transcend a focus on the immediate patient complaint or disease to proactively identify individuals who are eligible for screening and enhance the probability that a recommendation to be screened occurs.17 Failing to institute these systems virtually guarantees that numerous opportunities to recommend CRC screening will be missed.14 Implementing office systems is not easy. It usually demands sustained provider leadership, time devoted to change, and an approach to measuring progress.

Three strategies for increasing CRC screening rates are office policies, reminder systems, and communication strategies. Office policies often exist in the mind of the practitioner, though they are frequently unwritten, and reminder systems are already familiar to many clinicians. Communication strategies are less familiar, but hold promise. The challenge for office-based practitioners is to select and implement an evidence-based strategy that will improve the performance of their practice. The next sections describe these strategies and the supporting evidence. Additional information and tools may be found online in How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Clinician’s Evidence-Based Toolbox and Guide at www.cancer.org/colonmd under the “For Your Clinical Practice”
OFFICE POLICY: ALGORITHMS AND FLOW CHARTS

Office policy is the foundation of a systematic approach to cancer screening. Only a systematic approach will achieve the goal of a recommendation to every appropriate patient. Visual depictions of the office policy may be the easiest way to convey them. For example, the algorithm in Figure 1 briefly summarizes key points regarding CRC screening test indications based on current guidelines. As another example, the flow chart in Figure 2 presents a sample office policy for use of the stool blood test. To actualize an office policy, you must commit to delivering it and engage your office staff in the endeavor. The policy needs to be depicted, presented, and posted. The office staff must be formally introduced to the policy and have an opportunity to ask questions about its implementation. The presentation of the policy is central to achieving its success. The only way to ensure that the policy is implemented is to monitor the outcome.

*Options
FOBT at home q year
Flex Sig q 5 years
Flex Sig + FOBT
Colonoscopy q 10 years
DCBE q6-10 years

†IBD refers to chronic inflammatory bowel disease for >8 years

‡Screening generally begins at puberty for FAP and at age 21 for HNPCC. Referral to a specialist and inclusion of additional screening for related cancers is recommended.

§Screening may follow average risk guidelines if there is only one second-degree relative or one third-degree relative with CRC. Screening may begin at age 50 if there is only one first-degree relative who presented with an adenoma after age 60. Obtain a complete family history.

FIGURE 1 Sample Screening Algorithm.19,20,21

heading. This document may be updated during 2008 to reflect any changes in the American Cancer Society (ACS) CRC screening guidelines.18
FIGURE 2  Sample FOBT Policy in Flow Chart Form. FOBT indicates fecal occult blood test. Reprinted with permission from the American Cancer Society, Inc. 18

***From Seabury J. Tools and Strategies to Increase Colorectal Cancer Screening Rates: A Practical Guide for Health Plans. Harvard Center for Prevention and American Cancer Society. 2004. Approach reprinted from procedures of Dartmouth Medical School, 2003.***
A Global or Opportunistic Approach

While some physicians prefer to give recommendations for screening at an annual check up, this approach will not reach all patients. An alternate style of practice is to recommend screening at all types of visits. This may be referred to as a “global approach” or an “opportunistic approach.” Given the many demands on a practitioner’s time, the global approach will work when office procedures function automatically to get a recommendation to every appropriate patient—even if the clinician is not immediately involved and other staff provide the recommendation instead.

Features of an Office Policy: Focus on Risk

All consensus guidelines for CRC screening require risk assessment as a first step. The approach to screening differs significantly based on risk category (average, increased, or high risk). While it is true that patient preference, insurance coverage, and local medical resources are important, the clinical assessment starts with risk. Practices can adopt a standardized list of a few questions that can determine risk status. For example, questions about family history of colorectal adenomas and CRC (including age at diagnosis), history of inflammatory bowel disease (including duration), and family history of malignancies associated with hereditary syndromes would be appropriate for current guidelines. Of course, answers to these questions will remain accurate only if they are updated.

Regardless of updates, the key element of a CRC screening recommendation is to suggest the right test beginning at the correct age for individuals at each risk level. Screening should also be repeated at the proper interval contingent on risk level. High-risk patients with hereditary CRC syndromes or inflammatory bowel disease should be referred to specialists early in life. If you suspect a hereditary CRC syndrome, you may choose to refer your patient to a center that specializes in cancer genetics. You can locate a cancer genetic counselor in your local area by visiting www.nsgc.org.

A patient’s personal awareness of his or her risk level is important. Awareness of the health status of family members is also needed and should be encouraged. Doctors can persuade family members to communicate with relatives so that they will learn of changes in their risk status. This recommendation to communicate should be documented in the chart.

Disparities

Awareness of discrepancies in screening rates for people in racial and ethnic groups can help to reduce these disparities. Hispanic and non-White patients are the least likely to receive preventive services, including CRC screening. The problem of health care disparities includes but also extends beyond the absence of a usual source of care or health insurance. People with less education and income—or older age—are also less likely to get a doctor’s recommendation for CRC screening. But when recommendations are offered and access barriers removed, screening rates for those with less education and income rise substantially.

Follow Through with Colonoscopy

One positive fecal occult blood test (FOBT) should always generate a referral for a colonoscopy (unless there is a clear medical contraindication to this procedure). A positive FOBT should not be repeated. Lack of adherence to dietary adjustment during the testing period is not an indication for repeating the stool blood test. Similarly, finding even one adenomatous polyp or a polyp that was not biopsied on flexible sigmoidoscopy (FS) should always lead to a referral for a colonoscopy. Follow up of a positive screening test result with colonoscopy is an important measure of quality of care, as well as a risk-management issue. Tools such as tracking sheets and logs have been developed to assist a practice in tracking test results to assure follow up with colonoscopy. These may be placed in a screening follow-up file and reviewed monthly. An example of a tracking sheet is shown in Figure 3. It is used for an individual patient and is placed on the chart or in a central follow-up file. Electronic medical records may also offer tracking features.

Many patients with positive FOBT results fail to receive a recommendation for a colonoscopy. Even those who get the recommendation may not complete the examination. In 1993, only 38% of patients enrolled in a health maintenance...
organization who contacted their physician after a positive FOBT received a recommendation for a complete diagnostic examination. While a 2001 study in a similar setting demonstrated that a larger percent (as many as 60%) were likely to get the recommendation for a total colon work up (in this study defined as either colonoscopy or the combination of FS plus barium enema x-ray), the majority failed to complete this work up. When patients lack health insurance, the percentage receiving a colonoscopy is undoubtedly lower.

![Colorectal Cancer Screening—Tracking Template](image_url)

**FIGURE 3** Colorectal Cancer Screening—Tracking Template. Reprinted with permission from the American Cancer Society, Inc.18
Other Considerations: Medical Resources, Insurance Status, and Patient Preference

An office policy on CRC screening must take into account the screening options that are available in the community. Not every community provides easy access to all screening options. In many areas, obtaining a FS is more difficult than obtaining a colonoscopy. However, stool blood testing is available in every community. And a recent analysis of the national endoscopic capacity for CRC screening conducted by the Centers for Disease Control and Prevention concluded that there is capacity to screen the entire eligible population within 1 year using stool blood tests, backed up by colonoscopy for those who screen positive.44

The office policy may include an approach to underinsured and uninsured patients. Regrettably, health insurance coverage for CRC screening is not uniform across all plans, nor are all options covered by all plans. As of 2006, only 19 states required insurance coverage for all CRC screening options.45 The majority of states have no laws that mandate coverage. Even where insurance plans cover all options, deductibles and copays preclude screening for some individuals. Doctors should ask patients whether cost is a barrier. If it is a barrier, a stool blood test may be the best way to start the screening process. The same approach applies to uninsured patients. However, if the screen is positive and a colonoscopy is needed, the local health department may be helpful. In 2007, legislation was introduced into Congress (HR 1738) that would create a national system of subsidized colorectal screening programs at the state and local level for low-income, uninsured individuals. If this legislation passes, access to colonoscopy will improve.

**Patient Preference**

Your office policy can allow for patient preference if options are available.46–48 The simplicity, convenience, privacy, safety, and low cost of a stool blood test at home is preferred by some patients even though it needs to be done annually. The less frequent 5-year interval and direct visualization offered by FS is more appealing to some, but may be difficult to obtain in some regions. The infrequent 10-year interval and higher sensitivity and specificity of a screening colonoscopy has the most appeal to others, but may be a scheduling problem or less available in some areas. Colonoscopy is also the most disruptive to daily life. Although it is very safe, approximately 2.7 per 1,000 patients will suffer a nonlethal complication without polypectomy. With polypectomy, 12 per 1,000 patients will suffer a complication. The mortality rate associated with colonoscopy is quite low: studies suggest between 1 in 16,000 and 1 in 27,000 procedures.49

**TABLE 1 Types of Office Reminder Systems for Patients and Physicians**

| A. Options for patients |
|-------------------------|
| Educational reminders   |
| Cues to action         |
| B. Options for physicians |
| Chart prompts          |
| Ticklers and logs      |
| Staff assignments      |
| Audits and feedback    |

Reminder systems work.50–54 They can be directed at physicians or patients or both (see Table 1). Reminders directed at patients are endorsed by strong evidence. They have been demonstrated to be effective with screening for breast cancer and CRC.52,55

**Patient Reminders**

Patient reminders are of 2 types: those that focus on action, called “cues to action,” and those that educate.52 Cues to action are reminder postcards, letters, prescriptions, phone calls, and personal messages. These are most effective if they are delivered by an individual either over the phone or in person.38 A meta-analysis of 43 randomized controlled trials on patient reminders in the context of screening for breast cancer found that these approaches achieved a 13% to 17.6% improvement in screening rates.52 Two reminder options worked better than one.52 Patient reminders have also been shown to be effective with CRC.55 Sample post cards, reminder letters, and phone scripts may be found online in the Appendix of the Toolbox and Guide.18
Physician Reminders

Physician reminders include chart prompts such as alerts and screening schedules, tickler systems, and tracking logs. Age-appropriate screening schedules should be placed on each patient’s chart.\(^5\) Chart alerts vary, but are generally colored stickers that are placed inside or on the cover of the chart to catch the attention of the clinician. Logs or tracking sheets are used to follow the patient’s progress through the screening process to ensure that it is completed (see Figure 3). Tracking sheets can be filed alphabetically and reviewed periodically or placed in a tickler file. A staff member of the practice is assigned responsibility for contacting patients until all steps in the screening process are complete and documented on the chart.

A tickler system is created when a copy of a lab slip, referral, reminder letter, or tracking sheet is placed in a “tickler file.” A tickler file is a series of file folders, one for each month of the year. (Subfolders for each day of each month may be added.) The copy is filed by date of the visit. The contents of each folder are organized alphabetically. When results or reports arrive, the copy is pulled from the tickler file, the patient is notified by phone or mail, the results are placed on the chart, and a visit is scheduled if appropriate. On a specific day each month, all the copies in the tickler file are reviewed. Orders with no accompanying results need follow up. Patients receive phone calls, postcards, or letters. Tracking sheets that are started when patients begin the screening process may be placed in the tickler file. Regular review of tracking sheets in the tickler file will assist the physician or the practice in following the screening process through to completion with follow up of abnormals. For physicians who wish to apply this system to repeat screenings in the subsequent year, folders may be created for each month of the next year, as well. A reminder letter with the patient’s name on it or a copy of the original result may be placed in the folder for the subsequent year.

Reminder systems directed at physicians are effective. The evidence on physician reminders comes from a variety of sources. A meta-analysis of studies of physician reminders that summarized 35 randomized controlled trials on reminders for mammography found an average 13.2% improvement in screening rates.\(^5\) A second meta-analysis of 33 randomized controlled trials examining the uptake of preventive services found an overall average 13.1% (95% confidence interval, 10.5% to 15.6%) improvement with use of reminders and an average 13.7% (95% confidence interval, 4.7% to 22.8%) increase in use of FOBTs.\(^5\) The reminders included chart prompts, alerts, ticklers and logs, changing staff assignments, and audits and feedback.

Audits and Feedback

Audits and feedback that provide focused information after assessing knowledge have been referred to as “cognitive” reminders. They can be viewed as tools to measure progress or as a cognitive cue for the clinician. In a large meta-analysis of interventions to raise mammography screening rates, these methods were the most effective, leading to an 18.6% improvement.

An audit is a measurement of screening rates, referrals, or follow up of screening by means of a chart review. A simple chart audit is done by pulling charts of the appropriate patient population and reviewing each chart to document whether the specific item is found on the chart. Examples of typical items to be documented are whether the result of an up-to-date screening test is on the chart, whether there is a physician order for screening on the chart, and whether there is documentation of patient risk factors for CRC or of a doctor-patient discussion about screening. Chart audits can produce feedback for a specific clinician or an entire practice. There is evidence that feedback is more effective if it is specific. Figure 4 depicts a sample chart audit template. Chart reviews consume time, but they are not complicated.

A context is needed to interpret the results of an audit. The results can be put in perspective through national or local benchmarks. For example, a 75% screening rate may not satisfy the provider, but it may be above the national average. Comparison helps the clinician understand the results in the context of national trends and goals. Such information is available online from the National Committee for Quality Assurance (www.NCQA.org). Goals have also been set by
### III. Audit and Tracking Sheets

| ID | Name | Date | Gender | Race | Ethnicity | FOBT Screen | FOBT Result | FOBT Date | FOBT Y/N | FOBT Result Date | FOBT Y/N | Colonscopy Result | CS Date | CS Y/N | Colonoscopy Result | Colonoscopy Date | Diagnosis |
|----|------|------|--------|------|-----------|-------------|--------------|-----------|----------|----------------|----------|---------------------|---------|--------|---------------------|----------------|----------|

**Source Adapted from materials developed by the Maryland Department of Health and Mental Hygiene Cancer Prevention Education Screening and Treatment Program.**

**FIGURE 4** Audit and Tracking Sheets. Reprinted with permission from the American Cancer Society, Inc.\textsuperscript{18}
a national collaborative of primary care clinics through the Health Resources Services Administration Bureau of Primary Care (www.healthdisparities.net). A baseline audit, a follow-up audit, and an additional audit after a year will provide insight about the effectiveness and endurance of changes in the practice.

Audits can generate Continuing Medical Education credit toward the Physician’s Recognition Award as part of an American Medical Association initiative to provide credits for performance improvement activities. This initiative coincides with programs underway at 2 specialty boards, the American Board of Family Practice (ABFM) and the American Board of Internal Medicine (ABIM). These programs provide credit toward maintenance of certification for physicians who complete online “practice improvement modules.” While each board has its own modules, the boards are collaborating. Completion of an online practice improvement module of the ABIM generates credit toward maintenance of certification from the ABFM. The mutual reinforcement of these activities by the American Medical Association, ABIM, and ABFM reflects endorsement of the belief that audits and feedback lead to improved medical practice.

Another approach to raising rates of completion of preventive services that is widely cited is to remind physicians by assigning office staff different responsibilities in the office. Evidence regarding this approach in the context of mammography screening demonstrates a 13% improvement. Examples of changes to a visit that rest on new staff roles are listed in Table 2.

Electronic medical records (EMRs) that offer automated reminder systems are in active use by clinicians in a growing number of settings. Several features must be present in an EMR if it is likely to enhance screening. The EMR should be able to generate automatic reminders and lists of eligible patients with their screening status. In the years to come, more EMR systems that meet the needs of primary care practice and facilitate preventive screening will be used in practice.

Reminder tools for both patients and physicians are widely available. A collection of such tools is provided on the Web site of the ACS in How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Clinician’s Evidence-Based Toolbox and Guide.

### TABLE 2 Changes to the Office Visit by Altering Staff Assignments

1. While in the waiting room, the receptionist may ask the patient to complete a questionnaire to provide information on risk status, screening history, and attitudes. Or at patient check in, have staff specifically ask about preventive care and highlight services that are needed or past due.
2. Preceding the encounter with the clinician, have the staff that does vital signs ask the patient about family history and previous screenings and utilize a brief “stage of decision” survey shown in Figure 5 to determine the patient’s stage of decision making on screening.
3. Before the patient leaves the office, assign a staff person who will check screening status and provide the recommendation and referral.
4. At check out, have patients fill out reminder cards and file these by the month and year of the planned notification. Have staff send the reminders at the right time.
5. Communication beyond the office visit can occur by phone or in writing if patients are contacted by staff a month before they are due for colorectal cancer screening.

### COMMUNICATION MODELS

Communication strategies can facilitate and promote the delivery of health messages that work to help get patients the screening they need. Many studies have found that “theory-based” strategies have the largest effect on patient behavior. Although evidence has been published, descriptions of theory-based interventions in the medical literature are more likely to be known to certified health educators than to physicians. A meta-analysis of patient education interventions for breast cancer screening revealed that theory-based education strategies were far more effective than generic education strategies. They increased screening rates by 24% compared with generic information, which was no more effective than usual practice. The improvement was greater when the approach was active, involving conversation with another individual either over the phone or in person.

One theory-based model that is easy to understand is commonly referred to as “stages of decision.” It is based on the transtheoretical model of change developed by Prochaska and Diclemente. The idea is to determine the patient’s stage of readiness to change behavior (in this case, undergoing CRC screening) and address communication...
The physician who knows specifically to that stage. The physician who knows the decision stage can move efficiently to the right message. The stage model has been used with interventions focused on many health issues, but lends itself neatly to CRC screening. Table 3 lists the stages of decision on CRC screening and the messages that are needed for each stage. A tool that can be used to identify the patient’s decision stage appears in Figure 5. These questions can be administered to the patient by a front desk staffer, a medical assistant, or the physician. Of course, in using this approach, the clinician should move through the stages as far as he or she can during each office visit.

Models of education for behavior change evolved from years of work by professionals in the field of health education. They are guided by a framework and constructs that define the effective elements of the communication process. The constructs may be tested, which provides

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**TABLE 3  Decision Stages and Corresponding Physician Message**

| Decision Stage                          | Physician Message                                                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------|
| 1. Never heard of CRC screening         | 1. Provide basic information about risk of CRC and benefits of screening.          |
| 2. Heard of but not considering CRC screening | 2. Remind patient about risk of CRC and benefits of screening. Discuss the options for screening. |
| 3. Heard of and considering CRC screening | 3. Assist patient to select a screening option. Help identify any barriers and possible solutions. |
| 4. Heard of and decided to do CRC screening | 4. Discuss logistics. Answer questions.                                          |
| 0. Decided against CRC screening         | 0. Probe for reasons and address them.                                             |

CRC indicates colorectal cancer.

> Use this questionnaire when starting a conversation with a patient about screening. It will help you identify the readiness of the patient for screening. Describe the screening test (eg, stool blood test [FOBT], flexible sigmoidoscopy [FS], or colonoscopy [CS], etc.).

1. Have you ever heard of (FOBT, FS, CS)?
   Yes—Go on
   No—Stop (Stage 1)

2. Are you thinking about doing a (FOBT, FS, CS)?
   Yes—Go on
   No—Stop (Stage 2)

3. Which of the following statements best describes your thoughts about doing a (FOBT, FS, CS) in the future?
   a. I have decided against doing a (FOBT, FS, CS). (Stage 0)
   b. I’m thinking about whether or not to do a (FOBT, FS, CS). (Stage 2 or 3)
   c. I have decided to do a (FOBT, FS, CS). (Stage 4)

Responses place the individual in a decision stage related to screening test use:
Stage 0: Decided against
Stage 1: Never heard of
Stage 2: Heard of—Not considering
Stage 3: Heard of—Considering
Stage 4: Heard of—Decided to do

**FIGURE 5  Questions to Identify Decision Stage. Figure data courtesy of Ronald Myers, PhD, Thomas Jefferson University.**
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an evidence base. Although there exist important theoretical and practical differences between these models, they share some common features. Each is based on theories that explain health behavior and has been demonstrated to enhance the likelihood of producing actual changes in behavior. The result is that clinicians may soon have access to tools that are demonstrated to improve the effectiveness and efficiency of communication in their practice.

Models also make it possible for other office staff to communicate on behalf of a doctor. Staff members can determine the decision stage and begin the conversation with the patient. Every member of the staff could be an asset to the patient-care process. Rising pressure on physician time raises the value of communication tools that take pressure off of the clinician. Studies confirm what primary care physicians know well: they have less time to accomplish a larger number of objectives with each patient visit. Strategies and tools that improve efficiency are needed. When integrated into office flow, use of stage-based communications may be a valuable tool.

CONCLUSION

Despite the fact that CRC is largely preventable, it remains the second leading cause of cancer death in the United States. If screening for CRC were universal—beginning at age 50 years for those at average risk and earlier for those at increased risk—with timely removal of adenomas and early cancers, the mortality from CRC could be drastically reduced. Health care disparities in CRC incidence and mortality would fall precipitously.

Physician recommendation is one of the most powerful influences on individual patient decisions to undergo cancer screening. While 98% of primary physicians do recommend CRC screening to their patients, most physicians do not utilize systems to ensure that all of the age- and risk-eligible patients enrolled in their practices receive a recommendation to be screened. Only a systematic approach that is designed to provide a recommendation to every eligible patient who visits the practice for any reason is likely to succeed in decisively raising national and practice screening rates.

Barriers to CRC screening should be identified and removed. Outdated knowledge must be updated. Changes in the guidelines must be understood. Lack of confidence in the efficacy of screening is unwarranted. Evidence indicates that at least one of the recommended screening modalities is acceptable to virtually all patients. While lack of health insurance and absence of a regular source of care are important barriers to screening, a stool blood test is affordable to almost everyone, and new stool blood test technology utilizing immunochemical testing has improved both the acceptability and performance characteristics of stool blood testing. Colonoscopy procedures are needed for those who have a positive stool blood test. As of today, little remedy is available to those who lack access or payment for colonoscopy. Federal legislation could reduce this barrier in the next few years.

An office policy that rests on accepted guidelines and an assessment of patient risk is primary. The office policy provides ongoing guidance to the members and staff of the practice. Reminder systems are effective and can be directed at patients, at providers, or at both. Systems that fail to perform audits and track results will fall short of the goal to screen all eligible patients. Instituting methods to track the screening status of individuals and audit the screening rates for the entire practice pose a challenge that must be addressed by every practice. Continuing Medical Education credit is now available for such efforts. Primary care-based screening remains the single most effective tool in a national effort to reduce death from CRC.

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