Developing a Quality Screening Colonoscopy Referral System in Primary Care Practice

A Report from the National Colorectal Cancer Roundtable

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Abstract

The use of colonoscopy in colorectal cancer (CRC) screening has increased substantially in recent years. Media messages and changes in insurance reimbursement, as well as new screening guidelines from the American Cancer Society and the US Preventive Services Task Force, have contributed to this increase. Primary care providers (PCPs) are frequently responsible for making the recommendation and referral for screening. The process of successfully referring a patient for screening colonoscopy can be cumbersome and requires a coordinated effort between the PCP and the endoscopist. In recognition of the potential complexity of this process, the National Colorectal Cancer Roundtable has issued a report to describe the components of a quality screening colonoscopy referral system in primary care practice. The elements of a quality program include an optimal scheduling and referral system, the appropriate patient preparation information, consistent reporting and follow–up systems, and a detailed approach to dealing with special situations.

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Introduction

The use of colonoscopy in colorectal cancer (CRC) screening has increased substantially in recent years.1,2 Celebrity endorsements for colonoscopy and changes in reimbursement by Medicare and other insurance plans, as well as new screening guidelines, have all contributed to this increase.3–5 In 2008, for the first time, the US Preventive Services Task Force (USPSTF) revised CRC screening guidelines specifically list colonoscopy as 1 of the 3 recommended modalities.6 The new 2008 CRC screening guidelines from the American Cancer Society (ACS), the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology still include a menu of acceptable screening options. However, a stronger emphasis is placed on full structural examinations, such as colonoscopy. Colonoscopy is more likely to contribute to...
colon cancer prevention through the detection and removal of precancerous polyps. Data from insurers and national health surveys have confirmed a dramatic shift away from sigmoidoscopy and double-contrast barium enema and a migration toward colonoscopy as the most frequently performed screening test.2,7

The National Colorectal Cancer Roundtable (NCCRT) published an evidence-based Toolbox and Guide that helps primary care providers (PCPs) increase CRC screening rates in practice.8 The Toolbox and Guide outlines several approaches to help patients decide to undergo CRC screening and which test to choose. Because many patients choose colonoscopy, PCPs must develop systems of care that ensure the appropriate referral and completion of the test. Maximizing adherence poses manifold challenges, demanding the coordinated effort of the PCP and the endoscopist.

The components of a quality colonoscopy referral system in primary care practice are detailed in this article. The elements of a high-quality program include an optimal scheduling and referral system, the appropriate patient preparation information, consistent reporting and follow-up systems, and a detailed approach to dealing with special situations (Table 1).

### Table 1. Components of a Quality Colonoscopy Referral System in Primary Care Practice

| Components | Details |
|------------|---------|
| Optimal scheduling and referral system | Quality indicators for referral, Direct-access (or open-access) system, Patient navigation |
| Appropriate patient preparation information | Comorbidity issues, such as periprocedure anticoagulation, diabetic and other medications, antibiotic prophylaxis, and defibrillators and pacemakers |
| Advice on bowel preparation issues | Quality patient education material |
| Consistent reporting and follow-up systems | Documentation of quality colonoscopy report, Clear recommendations for follow-up or surveillance colonoscopy, Tracking system within primary or specialist care |
| Special situations | Strategies to improve colonoscopy adherence in minority populations, Strategies for the underinsured and uninsured |

### Table 2. Selected Quality Indicators for Colonoscopy

| Quality Indicators | Description |
|--------------------|-------------|
| Documentation of precautions (eg, management of warfarin, intraventricular defibrillator) | |
| Cecal intubation rate | |
| Mean colonoscopic withdrawal time in patients without polypectomy or biopsy | |
| Adenoma detection rate in first-time screening examination based on sex | |
| Major adverse or unplanned events that occur within 30 days of colonoscopy | |
| Rates of: | |
| Hospitalization | |
| Bleeding that requires transfusion | |
| Bleeding that requires unplanned endoscopic intervention | |
| Perforation | |
| Surgery | |
| Documentation of recommendation of follow-up to patient and primary provider | |

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### An Optimal Scheduling and Referral System

#### Quality Indicators for Referral

Most patients rely on their PCP to recommend CRC screening and to provide a referral for colonoscopy.9 Data have indicated that gastroenterologists perform the majority of screening colonoscopies in the United States, although the procedure is also performed by colorectal surgeons, many general surgeons, and a small number of PCPs and nurse endoscopists.5,10

Ideally, deciding where to send patients should depend on the ability of the endoscopist to consistently provide high-quality colonoscopy rather than their medical specialty. The Quality Assurance Task Group of the NCCRT has spearheaded the effort to determine which aspects of colonoscopy should be measured to improve quality and outcome tracking.11 This group has issued a call for endoscopists to provide report cards that document colonoscopy performance in every clinical practice. This will allow PCPs to have real information on which to base their referrals. The list of quality indicators shown in Table 2 has been approved by the American College of Gastroenterology, the American Gastroenterological Association, the
American Society for Gastrointestinal Endoscopy (ASGE), the NCCRT, and the ACS. Even when a report card is not available, PCPs should consider these indicators when deciding where to refer their patients. At a minimum, PCPs should identify endoscopists who routinely monitor quality indicators in their practices and have quality improvement programs in place.

**Direct-Access Colonoscopy**

Direct-access colonoscopy (DAC), also called open-access colonoscopy, is the process by which a patient is referred directly for colonoscopy, without the need for a preconsultation office visit with the endoscopist. DAC leads to a decreased wait time for patients getting a colonoscopy. First reported in 1979, DAC has been increasing in popularity over the last several years. According to 1 study, approximately 66% of PCPs have used DAC with their patients. A majority of providers and patients believe that a preconsultation office visit is necessary only for those patients who are at increased risk for complications from the procedure. Decreasing colonoscopy wait time for patients has a clear impact on improving colonoscopy adherence rates.

It can be difficult, however, to identify who is at increased risk from the procedure and therefore would benefit from a preconsultation office visit. To the best of our knowledge, no specific guidelines are currently available to assist PCPs with this decision. Individual endoscopists may have their own criteria, and it is important for PCPs to understand who is and who is not acceptable for DAC in conjunction with the endoscopist.

Some organizations and institutions have developed standardized forms to help guide the process. The New York Citywide Colon Cancer Control Coalition (C5), together with the New York City Department of Health and Mental Hygiene (NYC DOHMH), has been working to improve CRC screening rates since 2003. Goals of C5 are to promote PCP education, to remove barriers to CRC screening, and to provide endoscopists with more time for procedures by minimizing unnecessary preconsultation visits. C5 developed and implemented a standardized DAC form in 2008 within several institutions and health plans in NYC.

Using this form, PCPs answer medical history questions regarding the patients who are referred for colonoscopy. It is estimated that the form takes 5 to 10 minutes to complete. A positive response to any of the questions may indicate that DAC is not appropriate for the patient. A list of these questions can be found in Table 3. All negative responses result in a patient receiving instructions concerning how to contact the office of a participating endoscopist to schedule the procedure.

Not all DAC systems require that the PCP complete the patient referral form. In many DAC systems, a patient is asked to call the endoscopist’s office directly, and office staff will determine whether the patient is an appropriate candidate for DAC. Often, the endoscopist will prescribe and review the bowel preparation for the patient.

For institutions or offices that do not offer DAC, patients should be given the direct telephone number

| TABLE 3. Questions to Ask When Assessing for Direct-Access Colonoscopy |
| --- |
| 1. Is the patient... |
| — Age 75 or older? |
| — Under treatment for heart failure or valve-related concerns? |
| — Under treatment for kidney disease? |
| — Under treatment for emphysema? |
| — On anti-platelet or anticoagulation and cannot safely stop it for a week? |
| — Under active treatment for a recent episode of diverticulitis? |
| — Pregnant or possibly pregnant? |
| 2. Does the patient... |
| — Have heme(+) stool, hematochezia, or iron deficiency anemia? |
| — Have a pacemaker or implantable cardioverter defibrillator? |
| — Have Inflammatory Bowel Disease? |
| — Have a history of severe cardiac/pulmonary/renal/hepatic disease requiring oxygen supplementation or causing high risk for sedation/anesthesia-related complications? |
| — Have a history of endocarditis, rheumatic fever, or intravascular prosthesis? |
| — Have a history of difficult, incomplete, or poorly prepped colonoscopy? |
| — Have a history of difficulty with previous sedation/anesthesia? |
| — Have a history of sleep apnea? |

If “yes” is selected for any of the items, the patient may not be a good candidate for Direct-Access Colonoscopy. Consult with a GI specialist.

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to the endoscopist as a way to improve the referral process. Giving the patient an opportunity to place the call from the PCP’s office at the time of referral is likely to increase the proportion of patients who schedule a visit. As more PCPs and endoscopists obtain electronic health records (EHR), the online process of ordering colonoscopies and referring the patients will hopefully become easier. Currently, the C5 DAC form is imbedded in the NYC DOHMC’s EHR system. Reminders are sent through the EHR to notify providers when the patient is scheduled for colonoscopy. This prompts the completion of the DAC form, if not already done by the provider.

Patient Navigation

Patient navigators (PNs) have been used to facilitate medical care delivery for several medical conditions, and recently have been used to help improve CRC screening adherence. PNs (often nurses, health educators, or clinical office staff) guide patients through the screening process, and can be helpful in addressing barriers to screening such as scheduling and preparation. Most navigation relies on patient contact by telephone. PNs have been shown to increase CRC screening prevalence, particularly in minority and low-income women.18-21 When PNs have been used to improve adherence to colonoscopy, the results have also been promising. In 1 pilot study, the use of a PN decreased the no-show rate for colonoscopy from 40% to 10%, and the percentage of patients with an inadequate or poor bowel preparation decreased from 12% to 5%.22 In addition, practice revenue increased. Studies have also reported that patients express significant satisfaction with the navigation process.23,24 Patient navigation can be provided through the PCP, the endoscopist, or potentially through the payor system.

Appropriate Patient Preparation Information

Comorbidity Issues

Patients who have certain concomitant medical conditions need specific guidance in their preparation for colonoscopy. Issues of anticoagulation, diabetic and other medications, antibiotic prophylaxis, defibrillators/pacemakers, and preprocedure laboratory needs will be addressed in this section. Although general guidelines will be stated herein, PCPs should consult with their endoscopists to address specific recommendations.

Anticoagulation with warfarin

An increasing number of endoscopists are willing to perform colonoscopy while the patient continues receiving anticoagulation medication, with the understanding that the procedure may need to be repeated if a polypectomy is indicated. Growing evidence supports the safety of colonoscopy while the patient remains on warfarin.25-27 ASGE has published guidelines to distinguish between high-risk and low-risk conditions for periprocedure thromboembolism (Table 4).28

For patients undergoing colonoscopy with or without biopsy, anticoagulation may be continued for both high-risk and low-risk conditions. For patients undergoing colonoscopy with polypectomy, warfarin therapy should be discontinued. Bridge therapy with heparin or low molecular weight heparin is recommended for patients with high-risk conditions. The international normalized ratio (INR) should be <1.5 prior to the procedure.

| CONDITION | RISK FOR THROMBOEMBOLISM | PROTOCOL |
|-----------|--------------------------|----------|
| Colonoscopy with polypectomy | DISCONTINUE WARFARIN 3-5 DAYS PRIOR. CONSIDER BRIDGING THERAPY WITH HEPARIN OR LMWH. | DISCONTINUE WARFARIN 3-5 DAYS PRIOR. REINSTITUTE WARFARIN AFTER PROCEDURE. |
| Colonoscopy +/- biopsy | NO CHANGE IN ANTICOAGULATION. ELECTIVE PROCEDURES SHOULD BE DELAYED IF INR IS SUPRATHERAPEUTIC. | NO CHANGE IN ANTICOAGULATION. ELECTIVE PROCEDURES SHOULD BE DELAYED IF INR IS SUPRATHERAPEUTIC. |

High-risk conditions indicates atrial fibrillation associated with valvular heart disease, mechanical valve in the mitral position, mechanical valve, and prior thromboembolic event; low-risk conditions, deep vein thrombosis, uncomplicated or paroxysmal nonvalvular arterial fibrillation, bioprosthetic valve, and mechanical valve in the aortic position; LMWH, low molecular weight heparin; INR, international normalized ratio.

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Aspirin, nonsteroidal anti-inflammatory drugs, and antiplatelet therapies

According to the ASGE guidelines, colonoscopy (with or without biopsy or polypectomy) may be performed in patients taking aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) in standard doses.28 The data regarding other antiplatelet therapies are less clear. The ASGE states that available data were inadequate to make a recommendation on drugs affecting platelet function, such as ticlodipine, clopidogrel, and dipyridimole. A subsequent ASGE statement suggested that patients undergoing colonoscopy with or without biopsy do not need to discontinue antiplatelet therapy, whereas patients undergoing polypectomy should consider discontinuing the therapy 7 to 10 days prior to the procedure.29

Diabetic medications

The American Diabetes Association does not have guidelines regarding the adjustment of medications prior to colonoscopy. Many endoscopists schedule colonoscopy for diabetic patients early in the day to minimize the possibility of hyperglycemia or hypoglycemia. Some recommendations can be made regarding diabetes medications based on general consensus. Patients taking oral diabetes medications should refrain from taking their medications the morning of the procedure. Some providers recommend adjustment of oral medications the day before the procedure, but the recommendations are inconsistent. Patients should discuss this with their provider.

Patients taking insulin should be advised to take approximately one-half of their usual morning dose of isophane insulin (NPH), Lente, or Novolin 70/30, or insulin glargine (Lantus; Sanofi-Aventis, Bridgewater, NJ) and no regular or insulin lispro (Humalog; Eli Lilly and Company, Indianapolis, IN) the morning of the procedure. For patients taking evening insulin, these same instructions should be followed for the dose taken the evening before the procedure.30 Short-acting insulin should be considered if the blood glucose level is >200 mg/dL prior to the procedure, although only in small amounts to maintain a level between 100 mg/dL and 150 mg/dL.

Miscellaneous medications

Patients taking iron should discontinue it 7 to 10 days prior to the colonoscopy, because iron can affect the visualization of the colonic mucosa. Although patients receiving opioid analgesics do not need to discontinue their medications, they should be advised to drink an increased amount of fluids for 1 to 2 days prior to the colonoscopy. This will improve the cleansing process.

Antibiotic prophylaxis

The American Heart Association has stated that the administration of prophylactic antibiotics solely to prevent endocarditis is not recommended for patients who undergo colonoscopy.31 However, the ASGE guidelines state that antibiotic prophylaxis should be considered optional for patients undergoing colonoscopy (with or without biopsy or polypectomy) who are considered to be at high risk. High-risk conditions include prosthetic valve, a history of endocarditis, systemic-pulmonary arterial shunt, synthetic vascular graft (<1 year old), and complex cyanotic congenital heart disease.32

Defibrillators and pacemakers

Although the decision regarding how to proceed with colonoscopy in patients with an implantable cardioverter defibrillator or pacemaker lies with endoscopists, PCPs must make sure that endoscopists are aware of patients having the device. Diathermy or electrocautery during biopsy or polypectomy is associated with risk in these patients, and adjustments may need to be made. For example, patients with intraventricular antiarrhythmia devices and some pacemakers may need to have these devices “turned off” to safely receive electrocautery during the colonoscopy.11

Preprocedure laboratory indications

Other than the need to monitor the INR or blood glucose level as described in the situations mentioned earlier, to our knowledge there is no supporting evidence for the routine use of laboratory work prior to colonoscopy.

Advice Regarding Bowel Preparation Issues

Patients report that the bowel preparation is the most difficult aspect of the colonoscopy process.33 There are some simple measures that may alleviate some of the discomfort. Having a warm blanket available the night before the procedure may help lessen the chill that patients experience while drinking a large volume of fluid. Using a flavored product or taking short breaks if nausea occurs may also lessen the discomfort.34

Most oral solutions for bowel preparation use either sodium phosphate or polyethylene glycol (PEG) solutions as their base. Although 4-liter (large-volume) preparations have been standard in the past, growing evidence has supported the efficacy and safety of small-volume (2-liter) preparations.35,36 These are often used
with bisacodyl to improve effectiveness. However, for patients with certain medical conditions, sodium phosphate preparations should be avoided. This is particularly important for patients with kidney disease. In December 2008, the US Food and Drug Administration placed a boxed warning on all oral sodium phosphate products because of the risk of acute phosphate nephropathy. A consensus document regarding bowel preparation by the Task Force from the American Society of Colon and Rectal Surgeons, the ASGE, and the Society of American Gastrointestinal and Endoscopic Surgeons reported that patients at an increased risk of acute phosphate nephropathy should not use an oral sodium phosphate preparation. These patients include those of advanced age, those with kidney disease or decreased intravascular volume, and those taking medications that affect renal perfusion or function (ie, diuretics, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and, possibly, NSAIDs). PEG solutions are also believed to be safer in patients with electrolyte imbalances, liver insufficiency or failure, and congestive heart failure. Although to our knowledge there has been no official recommendation to stop the overall use of sodium phosphate bowel preparations, many endoscopists have stopped using them because of growing concerns.

### Quality Patient Education Material

Patient preparedness is critical to a successful colonoscopy. After concern about bowel preparation, anxiety is the second most common concern of patients undergoing colonoscopy. Patients need to be informed and to understand what to expect. Although direct communication concerning these issues from the PCP is important, there are also excellent patient education brochures available to help.

MD Consult has patient information on colonoscopy available in both English and Spanish that can be accessed through the “Patient Education” section of the Web site (available at: http://www.mdconsult.com [Accessed July 14, 2009]). UpToDate.com also has a helpful patient information section regarding colonoscopy. This can be accessed by clicking on the “For Patients” drop-down menu and then searching under “Cancer.” Providers must have a subscription to UpToDate to access this material. The ACS (available at: http://www.cancer.org) has a patient brochure available that addresses patients’ concerns entitled “Frequently Asked Questions About Colonoscopy and Sigmoidoscopy.” The NCCRT (available at: http://www.nccrt.org/General/Search.aspx?search_terms=public+awareness+brochures) has a list of public awareness brochures that address colonoscopy. For colonoscopy information that is available in additional languages, providers and patients can access http://www.cpmc.org/learning/layh.cfm/AA/R/S/15/HT/631 or http://www.cancer.org/acmmain/(0s2wt55qp2hpk55nz2qsf45)/DefaulACS.aspx (Accessed on October 18, 2009).

### Consistent Reporting and Follow-Up Systems

#### Documentation of a Quality Colonoscopy Report

Communication between the endoscopist and the PCP after colonoscopy needs to be consistent and standardized. The Quality Assurance Task Group of the NCCRT has developed a list of key subject areas that should be included in a standardized report (Table 5). Results of the pathology report may still be pending at the time the report is generated, but an addendum is indicated when the results are received.

#### Clear Recommendations for Follow-Up or Surveillance Colonoscopy

The follow-up plan is particularly important, because the surveillance of patients who were diagnosed with adenomas is 1 of the most common indications for colonoscopy. Unfortunately, PCPs and specialists do

| TABLE 5. Standard Colonoscopy Reporting: Key Subject Areas |
|-----------------------------------------------------------|
| • Patient demographics and history                        |
| • Assessment of patient risk and comorbidity               |
| • Procedure indication(s)                                 |
| • Procedure: technical description                         |
| • Colonoscopic findings                                   |
| • Assessment                                               |
| • Interventions/unplanned events                          |
| • Follow-up plan                                          |
| • Pathology                                               |

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not always recommend surveillance colonoscopy that is consistent with the guidelines. Multiple studies have confirmed that inappropriate referrals are made up to 25% of the time. This has a ripple effect because inappropriate referrals take up valuable resources and personnel, thus diminishing overall colonoscopy capacity for those patients who need it. Inappropriate colonoscopies also increase the risk of patients experiencing 1 or more harms associated with the procedure. Recommendations for follow-up should always be placed within the context of existing guidelines, and an explanation of recommendations that deviate from these guidelines should be provided so that referring PCPs and patients may place these recommendations in the proper context for future reference.

The US Multi-Society Task Force on Colorectal Cancer and the ACS recently developed a protocol to guide providers on appropriate surveillance after polypectomy (Tables 6 and 7).  

### Tracking and Reminder Systems Within Primary or Specialist Care

Whether a practice uses an EHR or paper charts, a system should be in place to document the need for a
colonoscopy and the appropriate follow-up interval for a patient’s subsequent colonoscopy. Tracking systems should ideally be linked to reminder systems. Reminder systems can be patient centered, such as patient mailings, or provider centered. Provider reminder systems to improve colonoscopy surveillance are supported by the evidence, but to our knowledge only limited studies have been performed on other technologic interventions. More recently, 1 study has reported that patient mailings are effective, and that provider reminders are effective if the patient has had 3 or more primary care visits. Although no data are currently available to indicate whether these systems should be housed in the primary or specialist care setting, it makes sense to encourage both groups of clinicians to pursue this goal.

A report on the use of EHR in CRC screening is currently being developed by the NCCRT, but it is discouraging that even electronic systems are not without challenges. One study has reported that identifying eligible patients using EHR led to errors in both ascertaining a previous colonoscopy history and the identification of active patients.

Special Situations

Strategies to Improve Colonoscopy Rates in Minority Populations

Racial and ethnic minorities are currently underrepresented in the use of colonoscopy relative to the rest of the population in the United States. This likely reflects issues of access and cost barriers observed in CRC screening rates more generally. In addition, minority patients may experience cultural barriers when scheduling and preparing for a colonoscopy. Bilingual PNs can be particularly helpful in this regard. In a pilot project using PNs in East Harlem, New York, colonoscopy adherence improved in the largely Hispanic and African American population. Other interventions, such as patient mailings and health literacy training for providers, can improve CRC screening rates in African American and Hispanic patients.

Equally important is the need to address insurance coverage issues, if necessary. For Medicare patients, insurance coverage for colonoscopy has alleviated the screening disparity noted between non-Hispanic whites and African Americans. However, the gap between Hispanics and non-Hispanic whites has widened.

Strategies for the Underinsured and Uninsured

The ACS has been advocating for legislation (the Colorectal Cancer Early Detection, Prevention, and Treatment Act) that would allow for federal coverage of CRC screening, including colonoscopy. Although this legislation has not yet been passed on the national level, several states have passed legislation to cover CRC screening. Individual state information can be found at http://www.acscan.org, under “How does your state measure up?”

The Centers for Disease Control and Prevention (CDC) provides federal coverage of breast and cervical cancer screening to low-income women in 50 states, the District of Columbia, 13 Native American tribes, and 4 territories through its program, the National Breast and Cervical Cancer Early Detection Program (NBC-CEDP). Although this program focuses on breast and cervical cancer, some states have used additional funds to add CRC screening coverage for these same patients. In fact, the CDC has supported the development of several pilot projects to promote CRC screening for low-income, uninsured individuals, and some of these pilots use colonoscopy as a primary screening method. Contact the CDC at http://www.cdc.gov for further information.

Conclusions

The successful referral of patients for screening colonoscopy involves a well-coordinated effort between the PCP and the endoscopist. Improving CRC screening rates is challenging, and clarifying the roles and responsibilities of the PCP and the endoscopist will assist in this effort. The NCCRT is committed to working with all providers as they work to optimize CRC screening in their practices.

Acknowledgments

The authors would like to thank the New York Citywide Colon Cancer Control Coalition and the New York City Department of Health and Mental Hygiene for their input in the preparation of the article.
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