Colon Cancer Screening in Concierge Practice

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Objectives: This study evaluated the effectiveness of the Center for Executive Medicine (CEM) concierge primary care practice on preventive colorectal cancer (CRC) screening rates relative to local and national comparator data.

Methods: We performed an electronic medical record search encompassing our entire patient population who are between the ages of 50 and 75 years to determine the rate of CRC screening. We compared this rate with the average rate of Medicare Advantage plans reported by our Independent Physician Association (IPA) in 2015 and national health plans reported by the National Committee for Quality Assurance in 2014.

Results: The CEM had a CRC screening rate of 90.2%, which was significantly higher than local IPA Medicare Advantage plans (63.3%) and National Committee for Quality Assurance national plans (57.7%–66.5%). CEM members were significantly more likely than were IPA members to undergo screening (odds ratio 1.425, 95% confidence interval 1.348–1.507, $P < 0.0001$).

Conclusions: These results suggest that the CEM practice strategy and processes increase CRC screening rates.

Key Words: colonoscopy, colorectal cancer, prevention, screening

In the United States, colorectal cancer (CRC) is the second leading cause of cancer death. Approximately 134,000 Americans were estimated to be diagnosed as having CRC in 2016 and that 49,000 would die of the disease. The most frequently diagnosed cancer among adults aged 65 to 74 is CRC; the median age at death by this disease is 68 years.[1]

Several strategies have been studied as screening modalities for detecting colon polyps and CRC. They can be divided into endoscopic methods such as optical colonoscopy, flexible sigmoidoscopy, imaging methods such as barium enema and computed tomographic colonography (CTC), and stool-based methods such as fecal occult blood and multitargeted stool DNA tests (fecal immunochemical test [FIT]-DNA). Of these procedures, optical colonoscopy is considered the gold standard for screening in the United States[2] and can accurately identify and remove precancerous adenomas in a single procedure.[3] Additional screening modalities, including capsule colonoscopy[4] and magnetic resonance colonography,[5] have been investigated but are not in widespread use, the former having failed to demonstrate sufficient diagnostic accuracy.

Fecal occult blood tests (FOBT) are take-home kits provided by physicians that can identify bleeding in the stool from colon tumors or polyps. FOBT are divided into two subcategories: guaiac fecal occult blood tests (gFOBT) and FITs. The most commonly used stool test for CRC screening is gFOBT, which uses heme or hemoglobin pseudoperoxidase activity to detect blood in the stool; FIT detects blood in the stool with reactions to human globin.[6] FIT-DNA combines FIT with the analysis of DNA markers shed from adenoma and carcinoma cells in the stool specimen.[1]

Several organizations have published guidelines that outline various CRC screening strategies for individuals at average risk for the disease. The most recent recommendations for these organizations show slight variations in screening strategies, as described below.

The American College of Gastroenterology recommends screening beginning at age 50, with optical colonoscopy every 10 years. As an alternative, patients can be offered

Key Points

- Colorectal cancer (CRC) is the second leading cause of cancer death in the United States.
- Increasing CRC screening reduces mortality.
- The rate of CRC screening in our practice was significantly higher than a local comparator Independent Physician Association population (90.2% vs 63.3%, $P = 0.0008$).
- Our physicians and staff take a focused and systematic approach to CRC screening, and our practice model allows our physicians more time to focus on direct patient care, review charts on a routine basis, and maintain proactive screening strategies.
- Although our systematic approach and patient-focused practice model are synergistic in our screening efforts, many of the elements responsible for our success could be adopted in nonconcierge environments.

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sigmoidoscopy every 5 to 10 years, CTC every 5 years, or a fecal-based detection test every 3 years.[7]

The American Gastroenterological Association recommends CRC screening beginning at age 50, with optical colonoscopy every 10 years, flexible sigmoidoscopy every 5 years, double-contrast barium enema every 5 years, or CTC every 5 years. Fecal tests, including annual FOBT, annual FIT, and FIT-DNA (with an uncertain interval)[5] also can be used to detect CRC.

The National Comprehensive Cancer Network (NCCN) recommends screening beginning at age 50, with optical colonoscopy every 10 years, sigmoidoscopy every 5 years, CTC every 5 years, or a high-sensitivity stool DNA with an uncertain time interval (every 3 years is suggested).[8]

The US Preventive Services Task Force recommends routine CRC screening between the ages of 50 and 75 years.[1] Their most recent guideline for direct visualization tests suggests screening with optical colonoscopy every 10 years, CTC every 5 years, flexible sigmoidoscopy every 5 years, or flexible sigmoidoscopy every 10 years with an annual FIT. Screening also can be done with stool-based tests such as gFOBT or FIT annually or FIT-DNA every 1 to 3 years.[1]

Methods

Study Population

The Center for Executive Medicine (CEM) is a group practice of three board-certified general internists in metropolitan Dallas, Texas. Most of our patients pay an annual membership fee for enhanced access to our physicians and staff. Most are insured through commercial preferred provider organization or health maintenance organization plans, Medicare, or Medicaid. We maintain a significant "scholarship" patient population of members who do not pay a membership fee.

The Medicare Advantage comparator population comprises a sample of patients who are from the same geographic area, are insured, and are managed by board-certified physician members of our local Independent Physician Association (IPA). The National Committee for Quality Assurance (NCQA) national patient population includes individuals enrolled in commercial and Medicare health plans.

Data Collection

To evaluate our CRC screening rate, we performed an electronic medical record (EMR) search of our entire patient population between 50 and 75 years of age to identify those eligible for screening. We then determined which of these patients had not been screened in the prior 10 years using optical colonoscopy, which is our exclusive CRC screening strategy. Although a detailed discussion of the advantages of various screening strategies is beyond the scope of this article, we considered several factors in formulating our recommendation, including low compliance with annual stool testing,[9] concerns with the exposure to radiation with CTC,[10] diagnostic accuracy for smaller adenomas,[11] interobserver variability in sensitivity,[2,12] and patient comfort and preferences with various procedures.[13] Only when the colonoscopy report and pathology report (if applicable) have been received in our office and attached electronically to the patient's EMR do we consider the CRC screening complete. We only analyzed age-based screening because we do not have a significant population of high-risk individuals (eg, familial polyposis). To compare our CRC screening rates, we used data from our local IPA for two Medicare Advantage payors between 2012 and 2015, as well as from the NCQA for adults 50 to 75 years of age in 2014.[14]

Data Analysis

Descriptive statistics (percentages) were used to compare CRC screening rates for CEM members, lPA Medicare Advantage local members, and NCQA national members. An odds ratio (OR) was calculated to measure the association between CEM practice membership and CRC screening rates. The OR is given by the formula[15] OR = (a/b) ÷ (c/d), where "a" is the number of CEM members who have been screened for CRC, "b" is the total number of CEM members eligible for CRC screening, "c" is the number of IPA members who have been screened for CRC, and "d" is the number of IPA members eligible for CRC screening. The standard error (SE) is given by the formula (RR indicating relative risk)[15]:

$$SE\{ln(RR)\} = \sqrt{\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d}}$$

The 95% confidence interval (CI) is given by the formula[15]: $95\%CI = exp(ln(OR) - 1.96 \times SE\{ln(OR)\}) to exp(ln(OR) + 1.96 \times SE\{ln(OR)\})$. Because the total number of NCQA national members was not reported, the OR for this population could not be calculated.

Results

The CEM population included 133 patients aged 50 to 64 years and 82 patients aged 65 to 75 years. The screening rate was the same for both age groups (74/82 and 122/133). Neither in the CEM population as a whole nor in the population divided by age group was there a difference in screening rate by sex.

In our population of "scholarship" patient-members who do not pay a membership fee, all of the age-eligible patients had undergone screening. Although scholarship patient-members were more likely (47/47 vs 147/168) to be screened, this difference was not statistically significant.

The Table shows the CRC screening population proportion and rates (percentages) for CEM members, IPA Medicare Advantage local members, and NCQA national members. CEM members had a higher CRC screening rate, 90.2%, when compared with IPA Medicare Advantage local plans (63.3%) and NCQA national plans (57.7%–66.5%).[14] CEM members were

Table. Colorectal cancer screenings of CEM patient population vs local IPA Medicare Advantage and NCQA national population

Plans	*P*	Rate, %
2016 CEM members	194/215	90.2
2015 IPA Medicare Advantage local plans	1186/1873	63.3
2014 NCQA national health plans[14]	N/A	57.7–66.5

CEM, Center for Executive Medicine; IPA, Independent Physician Association; N/A, nonapplicable; NCQA, National Committee for Quality Assurance.

significantly more likely than IPA local members to undergo screening, with an OR of 1.425 (95% CI 1.1582–1.7532, $P = 0.0008$).

Discussion

Screening for CRC saves lives. Improvements in CRC screening have been a major factor in decreasing mortality rates (44% in women and 47% in men) between 1990 and 2015.[16] Overall, CRC screening increased in the IPA Medicare Advantage population from 48.8% to 63.3% between 2012 and 2015, and NCQA results parallel these findings.[14] More progress needs to be made to fully realize the potential to save lives, however. Among the goals of the NCCN and American Cancer Society is to achieve 80% CRC screening by 2018; the organizations estimate that doing so would prevent approximately 280,000 new CRC cases and 200,000 CRC-related deaths in the United States during the next 20 years.[17]

We found that CEM had higher CRC screening rates than IPA Medicare Advantage local plans and NCQA national plans,

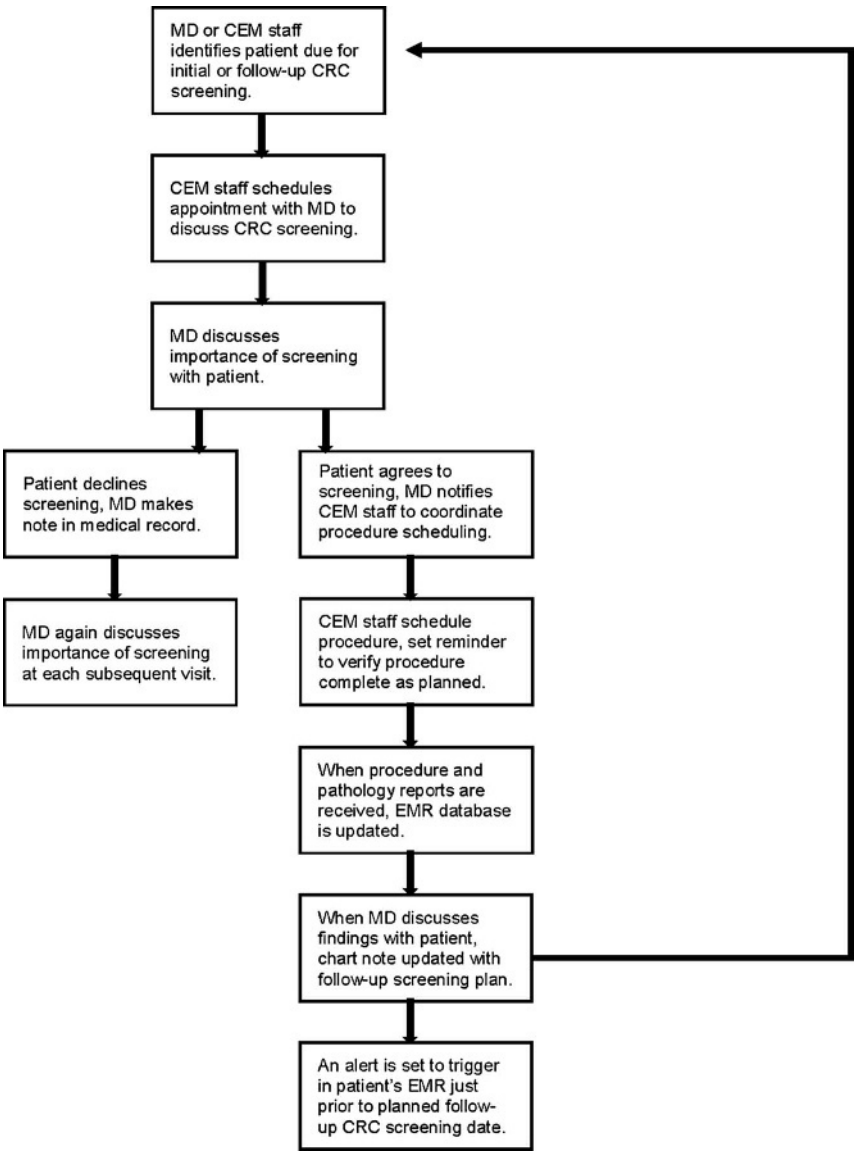

Fig. Center for Executive Medicine colorectal cancer screening workflow. CEM, Center for Executive Medicine; CRC, colorectal cancer; EMR, electronic medical record.

and exceeded the 80% goal set by NCCN and American Cancer Society. We believe that our practice model and screening infrastructure have allowed us to achieve this screening rate.

One of the main reasons cited for low CRC screening rates is the shortfall of patient education and insufficient counseling by physicians because of time constraints.[18] In addition, patients often decide to forgo the screening because of fear or embarrassment, despite their physicians' recommendations.[19] Our limited patient panel size allows us to spend more time with each patient to focus on preventive measures and educate him or her about the importance of early CRC detection. We address concerns directly as well as via staff communication to allay concerns and answer questions about the procedure. We also proactively review each patient's screening status to determine when he or she is due for his or her first and subsequent CRC screening. We then program patient-specific EMR reminders that alert us before the due date; these reminders trigger contact with the patient to discuss CRC screening again. The Figure outlines our strategy for ensuring timely initial and follow-up CRC screening.

When a patient has agreed to screening, his or her physician creates a chart note that is forwarded to a designated office liaison who schedules the procedure and ensures that the results are obtained in a timely manner. We centralize this process through a single staff member who maintains frequent contact with our preferred gastroenterology group. We have programmed a custom "referral document," which includes a request for screening colonoscopy; the date of prior colonoscopy screenings (if any); a current medication and allergy list; patient demographic information; and medical, social, and family history data. The referral document is sent to the gastroenterologist, often eliminating a precolonoscopy office visit. Our office staff communicates with the gastroenterology group and endoscopy center or hospital for availability and then coordinates scheduling with the patient, thereby transferring the extra burden of scheduling from the patient to our staff. To confirm the completion of the procedure, the referral and scheduling process is monitored in the "live" document until the procedure and pathology reports are received.

A concern is that patient socioeconomic status could contribute to our high screening rates. Although we cannot directly determine the impact of annual income on screening rates (we do not collect data regarding patient income and most of our patient population is employed), we found no suggestion of economic impact in our population. Approximately 20% of our patient population receive a "scholarship," thereby waiving the annual membership fee. All age-eligible scholarship members have undergone screening colonoscopy.

Conclusions

We recognize that we are fortunate to have ample time to review patient records proactively to identify screening gaps outside office visits and to have much more time during scheduled office visits to address them. We also have made a focused effort in the area of CRC screening with office procedures and customization of documents in our EMR to facilitate screening. These results suggest that our overall practice strategy and specific processes increase CRC screening rates.

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