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SPECIAL ARTICLE

Colorectal cancer screening: Recommendations for physicians and patients from the U.S. Multi-Society Task Force on Colorectal Cancer

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This document updates the colorectal cancer (CRC) screening recommendations of the U.S. Multi-Society Task Force of Colorectal Cancer (MSTF), which represents the American College of Gastroenterology, the American Gastroenterological Association, and The American Society for Gastrointestinal Endoscopy. CRC screening tests are ranked in 3 tiers based on performance features, costs, and practical considerations. The first-tier tests are colonoscopy every 10 years and annual fecal immunochemical test (FIT). Colonoscopy and FIT are recommended as the cornerstones of screening regardless of how screening is offered. Thus, in a sequential approach based on colonoscopy offered first, FIT should be offered to patients who decline colonoscopy. Colonoscopy and FIT are recommended as tests of choice when multiple options are presented as alternatives. A risk-stratified approach is also appropriate, with FIT screening in populations with an estimated low prevalence of advanced neoplasia and colonoscopy screening in high prevalence populations. The second-tier tests include CT colonography every 5 years, the FIT–fecal DNA test every 3 years, and flexible sigmoidoscopy every 5 to 10 years. These tests are appropriate screening tests, but each has disadvantages relative to the tier 1 tests. Because of limited evidence and current obstacles to use, capsule colonoscopy every 5 years is a third-tier test. We suggest that the Septin9 serum assay (Epigenomics, Seattle, Wash) not be used for screening. Screening should begin at age 50 years in average-risk persons, except in African Americans in whom limited evidence supports screening at 45 years. CRC incidence is rising in persons under age 50, and thorough diagnostic evaluation of young persons with suspected colorectal bleeding is recommended. Discontinuation of screening should be considered when persons up to date with screening, who have prior negative screening (particularly colonoscopy), reach age 75 or have <10 years of life expectancy. Persons without prior screening should be considered for screening up to age 85, depending on age and comorbidities. Persons with a family history of CRC or a documented advanced adenoma in a first-degree relative age <60 years or 2 first-degree relatives with these findings at any age are recommended to undergo screening by colonoscopy every 5 years, beginning 10 years before the age at diagnosis of the youngest affected relative or age 40, whichever is earlier. Persons with a single first-degree relative diagnosed at ≥60 years with CRC or an advanced adenoma can be offered average-risk screening options beginning at age 40 years.

Colorectal cancer (CRC) screening is the process of detecting early-stage CRCs and precancerous lesions in asymptomatic people with no prior history of cancer or precancerous lesions. The U.S. Multi-Society Task Force of Colorectal Cancer (MSTF) is a panel of expert gastroenterologists representing the American College of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy. The MSTF, like others, has long endorsed systematic offers of CRC screening to average-risk persons (persons without a high-risk family history of colorectal neoplasia) beginning at age 50 years, with general evidence supporting screening reviewed in previous publications.[1] This publication updates the screening recommendations of the MSTF for screening in average-risk persons.[1]

Screening differs from surveillance. Surveillance refers to the interval use of colonoscopy in patients with previously detected CRC or precancerous lesions and interval colonoscopy in patients performed to detect dysplasia in persons with inflammatory bowel disease affecting the colon. Surveillance recommendations from the MSTF on surveillance after cancer[2] and removal of precancerous lesions[3] are available in other documents. Screening is also distinct from diagnostic examinations, which refer to the investigation of patients

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with symptoms or positive screening tests other than colonoscopy. Colonoscopy is generally the test of choice for diagnostic examinations.

METHODS

Literature review

The English language medical literature using MEDLINE (2005 to August 1, 2016), EMBASE (2005 to third quarter 2016 update), the Database of Abstracts of Reviews and Effects (2005 to third quarter 2016 update), and the Cochrane Database of Systematic Reviews (2005 to third quarter 2014 update) was searched. In MEDLINE, subject headings for colorectal cancer screening were combined with headings for fecal occult blood test, fecal immunochemical test, colonoscopy, sigmoidoscopy, CT colonoscopy, fecal DNA, serum testing, cost-effectiveness, and quality. Similar searches were performed in EMBASE, the Database of Abstracts of Reviews and Effects, and the Cochrane Database of Systematic Reviews. Case reports and studies performed in patients with inflammatory bowel disease, prior CRC or polyps, or hereditary CRC syndromes were excluded. Review papers, meta-analyses, gastroenterology textbooks, and editorials were searched manually for additional pertinent references. The review includes studies published since 2008 but also incorporates older evidence used to draft the 2008 recommendations.[1] Evidence-based weighted recommendations are provided with supporting discussion to help guide clinicians in the management of these patients.

Process and levels of evidence

Guidance statements were developed by consensus obtained through joint teleconferences. The completed article was reviewed and approved by all 3 gastroenterology societies.

The use of GRADE for MSTF guidance papers has been outlined in detail elsewhere.[2] GRADE involves comprehensive literature search and summary (often through meta-analysis) and then a separate review of literature quality and development of recommendations. The MSTF uses a modified qualitative approach based on literature review (as described above for this article) but without formal meta-analysis. GRADE allows for a separate assessment of the quality of the evidence and strength of recommendation. This approach explicitly recognizes the importance of literature in informing clinical recommendations but allows latitude because recommendations may be influenced by other factors, such as patient preference, cost, and expert consensus. "Strong recommendations" are those that would be chosen by most informed patients. "Weak recommendations" are those where patient values and preferences might play a larger role than the quality of evidence. Within the document we preface strong recommendations with phrases such as "we recommend" and weak recommendations with "we suggest."

APPROACHES TO SCREENING

In the United States CRC screening usually results from an office-based interaction between a healthcare provider and patient. Screening in this setting is termed *opportunistic*.[4]

Programmatic screening (sometimes called *organized* screening) refers to a system-wide, organized approach to offering screening to a population or members of a healthcare plan.[4] Programmatic screening has potential advantages over opportunistic screening, including systematic offers of screening, reduction of overscreening, superior monitoring of quality, and systematic follow-up of testing. National CRC screening programs in Europe[5] and Australia[6] use fecal occult blood testing and include screening colonoscopy in Germany and Poland.[5] The United States has no national program for CRC screening, although several large healthcare plans offer programmatic screening, typically with a fecal immunochemical test (FIT).[7] Despite the potential advantages of programmatic screening, the United States has achieved the world's highest rates of CRC screening compliance at 60% and the greatest CRC incidence and mortality reduction, using an almost entirely opportunistic approach.[8-12] Incidence reductions in the United States were 3% to 4% per year and 30% overall in the first decade of this century.[11,12] High rates of screening in the United States may reflect widespread awareness of CRC and insurance coverage of screening. The MSTF anticipates growth of programmatic screening within healthcare systems but expects at least short-term continued reliance on opportunistic screening in the United States. Reliance on opportunistic screening can affect the preference for CRC screening, because achieving compliance with tests that should be repeated at short intervals is more challenging in the opportunistic setting.[13]

In the setting of opportunistic screening, healthcare providers can use several broad strategies to offer screening to patients. One approach is *multiple options*, in which the benefits, risks, and costs of 2 or more tests are discussed and offered to patients (Table 1).[14] Some evidence suggests that when patients are offered both colonoscopy and fecal occult blood testing, more patients undergo screening.[15] Other data suggest no benefit in overall compliance when multiple options are offered.[16-18] In 1 study, offering patients 5 options did not enhance compliance over 2 options.[19] In this regard, at least 9 different screening tests (colonoscopy, FIT, guaiac-based fecal occult blood test, FIT–fecal DNA, sigmoidoscopy, sigmoidoscopy plus fecal occult blood test, CT colonography, barium enema, and the Septin9 serum assay [Epigenomics, Seattle, Wash]) are endorsed or discussed in recent major