JAMA Clinical Guidelines Synopsis

# Colorectal Cancer Screening

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**GUIDELINE TITLE** Colorectal Cancer Screening: Recommendations for Physicians and Patients From the US Multi-Society Task Force on Colorectal Cancer

**DEVELOPER** US Multi-Society Task Force on Colorectal Cancer (MSTF) (American College of Gastroenterology [ACG], American Gastroenterological Association [AGA], and American Society for Gastrointestinal Endoscopy [ASGE])

**RELEASE DATE** June 9, 2017

**PRIOR VERSION** May 2008

**TARGET POPULATION** Adult patients being considered for colorectal cancer (CRC) screening

**MAJOR RECOMMENDATIONS**

- Screening should begin at age 50 years in average-risk persons (those without a high-risk family history) (strong recommendation; moderate-quality evidence), except in African American persons, in whom limited evidence supports screening starting at age 45 years (weak recommendation; very low-quality evidence).
- Persons with a family history of CRC or a documented advanced adenoma in a first-degree relative younger than 60 years or 2 first-degree relatives at any age are at higher risk and should undergo colonoscopy every 5 years, starting 10 years before the age at diagnosis of the youngest affected relative or at age 40 years, whichever is earlier (weak recommendation; low-quality evidence). (An advanced adenoma is ≥1 cm or with high-grade dysplasia or villous elements.) Persons with a single first-degree relative diagnosed at age 60 years or older should be screened starting at age 40 years (weak recommendation; very low-quality evidence).
- Colonoscopy every 10 years or annual fecal immunochemical test (FIT) are the preferred (first-tier) methods of screening (strong recommendation; moderate-quality evidence).
- Computed tomography (CT) colonography every 5 years, FIT–fecal DNA test every 3 years (strong recommendation; low-quality evidence), and flexible sigmoidoscopy every 5 to 10 years (strong recommendation; high-quality evidence) are appropriate screening tests but are second tier because of disadvantages vs tier 1 methods.
- Discontinuation of screening may be considered when a person with prior negative screenings reaches age 75 years or has less than 10 years of life expectancy (weak recommendation; low-quality evidence).

## Summary of the Clinical Problem

Colorectal cancer is the fourth most diagnosed cancer and the second leading cause of cancer death in the United States. The majority of CRC is thought to arise from precancerous lesions called adenomas through the adenoma-carcinoma pathway.[1] Screening for and removing colon adenomas in asymptomatic individuals can reduce CRC incidence and mortality. Therefore, routine CRC screening is recommended for the general population.

## Characteristics of the Guideline Source

This guideline[2] was developed by the MSTF, which consists of expert gastroenterologists representing the 3 major US gastroenterology societies: the ACG, the AGA, and the ASGE. The guideline was reviewed and approved by all 3 societies, and authors were required to disclose potential conflicts of interest.

## Evidence Base

The MSTF performed a systematic review of articles related to CRC screening, supplemented by additional relevant articles found via manual review. The quality of evidence and strength of each recommendation were assessed using the GRADE system (**Table**).

Although randomized trial data are lacking, numerous cohort and case-control studies have shown an association between colonoscopy and decreased CRC incidence and mortality[3,4] leading to the recommendation for colonoscopy as first-tier CRC screening. The recommended 10-year interval is based on studies of the natural history of adenoma progression. Annual FIT is also supported as first-tier screening and is particularly suited to programmatic screening because of its noninvasive nature, low cost, and high sensitivity for CRC.[5,6]

The combination of FIT with an assay for DNA markers of CRC exfoliated into the stool at 3-year intervals is recommended by the MSTF as a second-tier screening method based on a study of 9989 average-risk patients who underwent colonoscopy as well as FIT and FIT–fecal DNA testing.[7] Compared with FIT testing alone, FIT–fecal DNA had a higher sensitivity for CRC (92% vs 74%) but lower specificity (87% vs 96%). The FIT–fecal DNA test is significantly more expensive than basic FIT alone and the MSTF concludes that annual FIT ($30 per year) is more cost-effective than FIT–fecal DNA every 3 years ($650).

Computed tomography colonography every 5 years is a second-tier screening recommendation. Sensitivity is high (82%-92%) for adenomas of 1 cm or larger[8] but has significantly lower sensitivity for

**Table. Guideline Rating**

| Standard | Rating |
|---|---|
| Establishing transparency | Good |
| Management of conflict of interest in the guideline development group | Fair |
| Guideline development group composition | Poor |
| Clinical practice guideline-systematic review intersection | Good |
| Establishing evidence foundations and rating strength for each of the guideline recommendations | Fair |
| Articulation of recommendations | Good |
| External review | Fair |
| Updating | Fair |
| Implementation issues | Fair |

smaller adenomas and flat or serrated lesions. Flexible sigmoidoscopy every 5 to 10 years is also second tier based on randomized trials showing a 50% reduction in distal CRC incidence and a 25% reduction in overall CRC mortality.[2] However, its limited protection against right-sided CRC has limited widespread use in the United States.

The MSTF recommends starting CRC screening at age 50 years in most average-risk patients and suggests cessation of routine screening at age 75 years in patients with previous negative screening results. This decision should be individualized, taking into account patient preference; for instance, screening an active 80-year-old patient with no prior screening or avoiding screening in a 70-year-old patient with limited life expectancy. The task force now recommends that screening begin at age 45 years in African American patients. Although outcomes evidence is lacking, this recommendation is supported by the higher CRC incidence, increased prevalence of right-sided lesions, and lower mean onset age of CRC in African American individuals.[9]

Diagnosis of CRC in a first-degree relative before vs at or after age 60 years is used for risk stratification based on population-wide studies of CRC in patients with a positive family history.[10] Those with a first-degree relative diagnosed at or after age 60 years should start screening at age 40 years by any mode, without modifying screening frequency. Surveillance in conditions such as inflammatory bowel disease and genetic conditions such as Lynch syndrome are discussed elsewhere.

## Benefits and Harms

A major advantage of colonoscopy over other screening methods is that diagnosis and treatment (polypectomy of precancerous lesions) can be performed in the same session. However, disadvantages include the need for bowel preparation, procedural risks (bleeding, perforation, aspiration), operator-dependent variability in adenoma detection, and expense.

FIT and FIT–fecal DNA testing do not require prep or carry procedural risk, can be less expensive, and are particularly appropriate for patients with multiple morbidities who are at high risk of complications from sedation and invasive testing. However, if stool-based screening is positive, subsequent colonoscopy is required, with attendant risks and costs. Computed tomography colonography also is noninvasive, although unlike FIT and FIT–fecal DNA testing, bowel preparation is generally still needed. Disadvantages of CT colonography include radiation exposure and incidental extracolonic findings.

## Discussion

The guideline is similar to previously published versions from the MSTF but, importantly, differs in recommending 3 tiers of screening and in making weak recommendations for CRC screening in all African American individuals at age 45 years and a more detailed approach to screening for those with a positive family history.

The MSTF recommendations in this guideline are consistent with the US Preventive Services Task Force's (USPSTF's) 2016 grade A recommendation for CRC screening in average-risk individuals aged 50 to 75 years. However, the MSTF (and the USPSTF) recommendations differ from the American Cancer Society's 2018 CRC screening guideline update, which conditionally recommended CRC screening in all average-risk persons at age 45 years based on microsimulation modeling studies. All 3 guidelines acknowledge that screening decisions beyond age 75 years should be individualized.

## Areas in Need of Future Study or Ongoing Research

A randomized trial of colonoscopy vs FIT in reducing mortality due to CRC in a US veteran population is ongoing (NCT01239082). Current screening guidelines are centered on detection of conventional adenomas because these lesions are thought to be precursors of about 70% of CRC.[2] Other precancerous polyps such as serrated adenomas account for up to 30% of CRC. These lesions are often flat and inconspicuous with few surface blood vessels and are harder to detect by any method. Further research is needed regarding the natural history of these lesions as well as optimal techniques for detection and management.

The increasing incidence of CRC in persons younger than 50 years warrants additional attention, along with improved population health approaches to unscreened persons in general.

**Related guidelines and other resources**

Colorectal cancer screening for average-risk adults: 2018 guideline update from the American Cancer Society

Screening for colorectal cancer: US Preventive Services Task Force recommendation statement (2016)


### ARTICLE INFORMATION

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