Putting Prevention into Practice
An Evidence-Based Approach

This is an updated version of the department that appeared in print.

Screening for Colorectal Cancer

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▶ **See related U.S. Preventive Services Task Force Recommendation Statement at http://www.aafp.org/afp/2017/0215/od1.html and related Editorials at http://www.aafp.org/afp/2017/0515/p616.html and http://www.aafp.org/afp/2017/0515/p618.html.**

This PPIP quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and the supporting documents on the USPSTF website (http://www.uspreventiveservicestaskforce.org). The practice recommendations in this activity are available at https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectal-cancer-screening2.

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A collection of Putting Prevention into Practice published in *AFP* is available at http://www.aafp.org/afp/ppip.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 622.

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Case Study

A 50-year-old woman presents for a routine visit. She is healthy with no significant medical history, takes no medications, and has no personal or family history of cancer. The patient has no family history of Lynch syndrome or familial adenomatous polyposis, and no personal history of inflammatory bowel disease or previous adenomatous polyp. Physical examination findings are unremarkable. She asks about colorectal cancer screening.

Case Study Questions

1. Compared with fecal immunochemical tests (FITs) alone, multitargeted stool DNA testing (FIT-DNA) has a higher likelihood of follow-up colonoscopy and associated adverse events because of which one of the following pairs of test characteristics?

- ❑ A. Higher specificity and higher rate of false-positive results.
- ❑ B. Higher specificity and lower rate of false-positive results.
- ❑ C. Higher sensitivity and lower rate of false-positive results.
- ❑ D. Lower specificity and higher rate of false-positive results.
- ❑ E. Lower specificity and lower rate of false-positive results.

2. According to the U.S. Preventive Services Task Force (USPSTF), colorectal cancer screening is most appropriate in adults 76 to 85 years of age who have which of the following characteristics?

- ❑ A. They are healthy enough to undergo treatment if colorectal cancer is found.
- ❑ B. They do not have comorbid conditions that would significantly limit their life expectancy.
- ❑ C. They have a history of normal flexible sigmoidoscopy results.
- ❑ D. They have never been screened for colorectal cancer.

3. Which one of the following colorectal cancer screening methods must be administered annually?

- ❑ A. Guaiac-based fecal occult blood test (gFOBT).
- ❑ B. FIT.
- ❑ C. FIT-DNA.
- ❑ D. Computed tomography (CT) colonography.
- ❑ E. Flexible sigmoidoscopy.

Answers appear on the following page.

Answers

1. The correct answer is D. FITs, which identify intact human hemoglobin in stool, have improved sensitivity compared with gFOBT for detecting colorectal cancer. FIT-DNA combines FIT with testing for altered DNA biomarkers in cells shed in the stool and has increased single-test sensitivity for detecting colorectal cancer than FIT alone. Despite having higher sensitivity, FIT-DNA has lower specificity and a higher false-positive rate, which leads to a higher likelihood of follow-up colonoscopy. When deciding on a screening test, it is important that patients know there are no empirical data on the appropriate longitudinal follow-up for an abnormal FIT-DNA test result followed by a negative colonoscopy; however, there is a potential for overly intensive surveillance because of the implications of the genetic component of the test.

2. The correct answers are A, B, and D. The age at which the balance of benefits and harms of colorectal cancer screening becomes less favorable varies based on a patient's life expectancy, health status, comorbid conditions, and prior screening status. The decision to screen for colorectal cancer in adults 76 to 85 years of age should be individualized, taking into account the patient's overall health and screening history.[1] Adults in this age group who have never been screened for colorectal cancer are more likely to benefit. Screening would be most appropriate in adults who are healthy enough to undergo treatment if colorectal cancer is found and who do not have comorbid conditions that would significantly limit their life expectancy. Flexible sigmoidoscopy alone has been shown to reduce deaths from colorectal cancer, so this would not be an indication for further testing. Of note, the USPSTF did not specifically review the evidence on screening in populations at increased risk.[2] However, a positive family history (excluding known inherited familial syndromes) may be linked to about 20% of colorectal cancer cases.[3] About 3% to 10% of the population has a first-degree relative with colorectal cancer.[4]

3. The correct answer is B. There are multiple colorectal cancer screening strategies to choose from, with different levels of evidence to support their effectiveness, as well as unique advantages and limitations. There are no empirical data to demonstrate that any of the reviewed strategies provide a greater net benefit than the others because they were not compared with each other. Screening interval may factor in the process of choosing between the available options. Evidence from randomized controlled trials demonstrates that annual or biennial screening with gFOBT reduces colorectal cancer deaths. Although the standard screening interval for gFOBT is annual, biennial screening still reduces colorectal cancer deaths. Screening with FITs is recommended annually, whereas FIT-DNA testing may be performed every year or, as recommended by the manufacturer, every three years. CT colonography and flexible sigmoidoscopy are recommended every five years. The Cancer Intervention and Surveillance Modeling Network (CISNET) models found that several screening strategies were estimated to yield comparable life-years gained to annual or biennial use of gFOBT: (1) annual screening with FIT, (2) screening every 10 years with flexible sigmoidoscopy and annual screening with FIT, (3) screening every 10 years with colonoscopy, and (4) screening every five years with CT colonography.[5] CISNET modeling also found that FIT-DNA screening every three years was estimated to provide about the same amount of benefit as screening with flexible sigmoidoscopy alone every five years.

The views expressed in this work are those of the authors and do not reflect the official policy or position of the Icahn School of Medicine at Mount Sinai or the U.S. government.

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