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Practical advice for colorectal cancer screening

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There is no internal cancer in humans for which screening is more effective than colorectal cancer (CRC). Screening refers to the search for early-stage curable cancer and precancerous lesions in patients without symptoms and no history of CRC or precancerous polyps. Surveillance refers to follow-up of patients with cancer, precancerous polyps, or longstanding inflammatory disease involving the colon, and is widely considered the domain of colonoscopy alone.

This review presents practical advice for primary care physicians (PCPs) on CRC screening. The US Preventive Services Task Force (USPSTF) gives CRC screening a grade "A" recommendation, meaning that clinicians should offer or provide the service to all eligible patients.[1] Unlike the situation for surveillance, for which only colonoscopy is appropriate, the USPSTF recommends that several tests can be used for screening (**TABLE 1**[1]), without presenting a preferred test. The reality on the ground is that some of the tests considered acceptable by USPSTF are in common use, but others are hardly used in the United States.

TABLE 1. Colorectal cancer screening strategies considered appropriate by the US Preventive Services Task Force[1]

Test	Recommended Frequency
Stool-based	
Guaiac fecal occult blood test	Annually
FIT	Annually
FIT-fecal DNA stool test	Annually or every 3 years
Direct Visualization	
Colonoscopy	Every 10 years
Computed tomography colonography	Every 5 years
Flexible sigmoidoscopy	Every 5 years
Flexible sigmoidoscopy with FIT	Flexible sigmoidoscopy every 10 years plus FIT annually

Abbreviation: FIT, fecal immunochemical test.

This review highlights those tests that are in common use; explains why some tests are hardly used; reviews clinically relevant facts about the spectrum of precancerous lesions that can be targeted during screening; and discusses key practical aspects of the 3 screening tests that receive significant use in the United States.

Tests used frequently for CRC screening in the United States

The 3 tests receiving significant use for CRC in the United States are colonoscopy (recommended every 10 years), the fecal immunochemical test (FIT; recommended annually), and, recently, the FIT-fecal DNA stool test sold in the United States under the brand name Cologuard (Exact Sciences, Madison, Wisc.). Although the USPSTF did not rank the tests by preferred order of use, the US Multi-Society Task Force (USMSTF) on CRC (representing the American Gastroenterological Association, the American College of Gastroenterology, and the American Society for Gastrointestinal Endoscopy) ranks colonoscopy and FIT as "Tier 1" tests and the FIT-fecal DNA stool test as "Tier 2"[2] (**TABLE 2**[2]).

TABLE 2. Ranking of screening tests by the US Multi-Society Task Force on Colorectal Cancer[2]

Tier 1
Colonoscopy every 10 years
FIT annually
Tier 2
FIT-fecal DNA stool test every 3 years
Computed tomography colonography every 5 years
Flexible sigmoidoscopy every 5-10 years
Tier 3
Capsule colonoscopy every 5 years

Abbreviation: FIT, fecal immunochemical test.

Tests that are not (or are hardly) used for CRC screening in the United States

Flexible sigmoidoscopy has been found effective in reducing CRC in randomized controlled trials,[3-6] but its use for screening has declined to negligible levels in the United States.[7] The downfall of flexible sigmoidoscopy has been the failure to examine the entire colon (a poorly accepted concept in the United States); performance without sedation, which leads to unwillingness to repeat screening[8]; and poor reimbursement for performing the procedure.

Computed tomography (CT) colonography (virtual colonoscopy) first appeared 25 years ago, but has had minimal impact on screening in the United States.[9,10] The concept of preparing the colon for imaging with a diagnosis-only test not capable of polyp removal has generally been poorly received. The need for evaluation of incidental extracolonic findings creates a hassle factor for ordering physicians, and worry and expense for patients.[9,10] Important extracolonic diagnoses are less frequent. Substantial radiation exposure, especially in younger people, remains a concern.[1] Last, recent data demonstrate that colonoscopy has made substantial strides in improving sensitivity, whereas CT colonography has, arguably, been stagnant.[11-14] The result has been recent studies showing that colonoscopy far outperforms CT colonography for detection of serrated lesions[15] and flat lesions.[16]

Capsule colonoscopy has been studied for screening, and performed well for adenoma detection, although substantially lower for serrated lesions.[17] Capsule colonoscopy is approved by the US Food and Drug Administration (FDA) for evaluation of patients with incomplete colonoscopy, in which case it outperforms CT colonography.[18] The procedure is also approved for patients with bleeding whose health status makes them a poor candidate for colonoscopy. In the long run, the same factors that discourage CT colonography use—the need for bowel preparation without the ability to remove detected polyps—will likely confine capsule colonoscopy to a small niche of screening patients who fear colonoscopy and radiation exposure.

The first blood test to be commercialized for CRC screening (methylated septin 9 [Epi proColon], Epigenomics, San Diego, California) has such suboptimal performance characteristics that the USPSTF did not include it

among its recommended tests,[1] and the USMSTF on CRC flatly recommended against its use.[2] The test has modest sensitivity for cancer, no sensitivity for precancerous lesions, and an unacceptably high false-positive rate.[19] These performance features are unacceptable in an expensive test recommended annually.

Managing medicolegal risk associated with screening

Colorectal cancer is widely recognized as preventable by screening, and prognosis is strongly related to stage at diagnosis. PCPs seeing patients for wellness visits, or seeing patients repeatedly over time for any reason, should offer CRC screening and document the offer beginning at 50 years of age. Patients who have (1) a first-degree relative with CRC who was given their diagnosis at <60 years or (2) 2 or more first-degree relatives who have had a diagnosis of CRC at any age should begin screening at either 40 years of age or 10 years before the age at which CRC was diagnosed in their youngest affected relative.[2] Colonoscopy is the preferred screening test in this high-risk group, and is recommended every 5 years.[2] These high-risk patients should understand that colonoscopy is the highest sensitivity test by a substantial margin, that bowel preparation regimens have improved in tolerability, and that the procedure is now commonly performed without pain. Those who decline colonoscopy should be offered another test, preferably FIT.[20] If there are first-degree relatives with documented advanced adenomas (ie, an adenoma ≥10 mm in diameter or with villous elements or high-grade dysplasia), that relative can be counted the same as a first-degree relative with cancer.[2] If, as is usually the case, there is only a history of polyps in a first-degree relative but no details available regarding those polyps, that relative would not be considered to place the patient at increased risk.

Recently, the American Cancer Society recommended that all Americans be offered CRC screening at age 45 years.[21] This was a qualified recommendation, based on modeling studies and updated incidence data.[22] This recommendation has proved to be controversial,[23-25] but a subsequent cost-effectiveness study found that screening 45- to 49-year-olds has cost-effectiveness thresholds well within accepted standards.[26] The USMSTF on CRC recommends screening at 45 years in African Americans,[2] and the American College of Physicians recommends that African Americans be screened beginning at 40 years.[27] The actual age to begin screening might be dictated by insurance coverage. Given the variation in recommendations, it is hard to imagine that the medicolegal standard of care could be viewed as requiring initiation of screening at 45 years in any "average-risk" group. That standard would change if the USPSTF adopts a policy of recommending screening at 45 years.

Managing compliance with adherence targets

PCPs might be judged by the fraction of their patient cohort that is up to date with CRC screening. In this regard, colonoscopy is the easiest screening test for maintaining compliance because it provides adherence for the patient for a 10-year interval. Of the tests commonly used in the United States, colonoscopy is followed in this regard by the FIT-fecal DNA stool test, which is recommended at 3-year intervals, then by FIT, which is recommended in the United States annually.

The recommended cutoff value for the amount of hemoglobin in feces needed to produce a positive FIT is 20 µg of hemoglobin for every gram of feces. At this level, some evidence indicates that individual programs could reasonably adopt a 2-year interval for FIT.[20] A recent systematic review found that lowering the threshold for a positive FIT from 20 µg of hemoglobin for every gram of feces to 10 µg increases the sensitivity of FIT for cancer to 91%, with a specificity of 90%.[28] This performance is comparable to that of the FIT-fecal DNA stool test,[29] but at much lower cost, and suggests that expanding the interval for a FIT test with a cutoff of 10 µg hemoglobin to beyond 1 year is reasonable. However, this approach has not yet been endorsed in guidelines.

Understanding cancer prevention versus detection

Early detection of curable CRC saves lives, and is an important outcome of screening, with the spectrum of cancers detected by screening shifted far toward Stage 1 and Stage 2, compared to cancers diagnosed in symptomatic patients.

Because any case of CRC is associated with some risk of death, and because the treatment of CRC can involve morbidity related to surgery, chemotherapy, and radiotherapy, and even treatment-related mortality, prevention of CRC by detection and removal of precancerous lesions is a critical

and extremely valuable outcome of screening. In the United States, the incidence of CRC declined by 30% between 2000 and 2010[30]; much of this decline has been attributed to screening.[30-32]

It is particularly important to cast colonoscopy in a positive light with patients, because any screening test that is positive is an indication for colonoscopy. Polyp resection is, and should be, performed almost entirely by colonoscopy in the United States, with only occasional and rare benign colon polyps requiring surgical resection.[33,34]

There are 2 classes of precancerous colorectal lesions, called adenomas and serrated lesions (**FIGURE 1**).

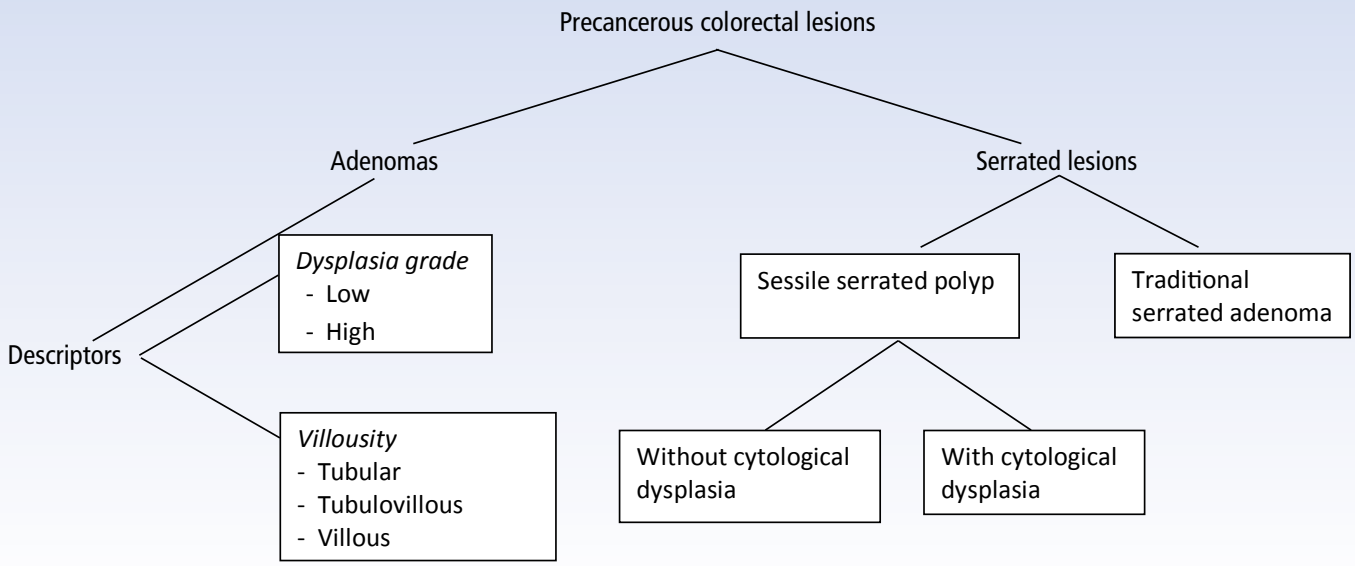
Adenomas are a precursor of 70% to 80% of CRCs. Endoscopically, adenomas are characterized by a more reddish color than serrated lesions (**FIGURE 2**), which is accounted for by a much greater concentration of blood vessels on the surface of adenomas.

Adenomas can be pedunculated, sessile, or flat, and even have a depressed conformation (**FIGURE 1, TABLE 3**). Depressed adenomas are rare but present a much higher risk of invasive cancer or high-grade dysplasia than nondepressed lesions. Histologically, all adenomas are dysplastic. There are 2 sets of pathology descriptors that apply to every adenoma (**FIGURE 1**). One characterizes the grade of dysplasia, which should be designated as either low (by far, the most common) or high. If the pathology report does not specify the degree of dysplasia, it can be reasonably inferred that the pathologist considered the adenoma to have low-grade dysplasia. The other set of descriptors characterizes gland structure as tubular (by far, the most common) or villous, or a mix of the 2 descriptors (tubulovillous).

Serrated lesions are a precursor of 20% to 30% of CRCs. Serrated lesions have 3 subclasses, 1 of which is hyperplastic polyps, which are not considered precancerous (**FIGURE 1**). Of the 2 precancerous subclasses of serrated lesions, by far the most important is the sessile serrated polyp (also called sessile serrated adenoma or sessile serrated lesion). Endoscopically, sessile serrated polyps are flat, are pale similar to surrounding mucosa (**FIGURE 3**), and are distributed more toward the right colon compared to adenomas, which are more evenly distributed through the colon. Histologically, sessile serrated polyps are mostly nondysplastic but are still considered neoplastic. A small group of sessile serrated polyps develop a region of dysplasia (**FIGURE 1**).

As alluded to, screening tests vary in their capacity to detect subtypes of precancerous lesions.

FIGURE 1. Precancerous lesions of the colorectum



Note: Not shown here is the hyperplastic subtype of serrated lesions, which is not considered precancerous.

FIGURE 2. Six examples of advanced adenoma

A Partly depressed descending colon adenoma

B 6-cm granular (bumpy surface) rectal adenoma

C 2-cm granular cecal adenoma

D 5-cm granular cecal adenoma

E 7-cm bulky sessile rectal adenoma

F 3-cm nongranular transverse colon adenoma

"Advanced" adenomas are prime targets of all screening methods. "Advanced" is defined as size ≥1 cm or histologically having any villous component or high-grade dysplasia. "Granular" refers to a bumpy surface and indicates a low risk of cancer and a low chance of submucosal fibrosis so that endoscopic resection is relatively straightforward regardless of size. "Nongranular" lesions are more likely to have cancer and submucosal fibrosis but are still generally endoscopically resectable at colonoscopy. All 6 lesions are benign lesions that were removed by colonoscopy. Arrows mark the lesion perimeter in **A** and **F.**

In particular, CT colonography is poor, relative to colonoscopy, in detecting flat adenomas and serrated lesions.[15,16] FIT is ineffective in detecting serrated lesions,[29] because they lack blood vessels on their surface. Many patients have adenomas and serrated lesions concomitantly, and FIT will indirectly detect some serrated lesions at follow-up colonoscopy because it detects some adenomas. Serrated lesions are hypermethylated,[35] and the methylation assays in the fecal DNA stool test are important contributors to the relative sensitivity of the FIT-fecal DNA stool test for serrated lesions, compared to FIT.[29] Colonoscopy far exceeds the sensitivity of all other tests for detection of both adenomas and serrated lesions, and is therefore the gold standard for prevention of CRC.

Organized versus opportunistic screening

Organized, or programmatic, CRC screening involves systematic population screening that is usually operated outside the United States by national health programs. In organized screening, the healthcare system systematically approaches all eligible patients for screening and thereby achieves the highest overall screening rate.[2] In the California Kaiser health system, organized screening with FIT has achieved 83% adherence with screening.[36] Outside of Kaiser, large organized screening systems are uncommon in the United States.

Nearly all organized systems choose FIT as their preferred screening test, although Kaiser makes primary screening colonoscopy available to patients who ask for it. FIT accounts for most of the cancer sensitivity in the FIT-fecal DNA stool test. Programmatic (repeated annual FIT) may equal the FIT-fecal DNA stool test for cancer sensitivity, and single-time FIT has a considerably lower false-positive rate and is much less expensive than the FIT-fecal DNA stool test. Organized screening systems generally view the cost of the FIT-fecal DNA stool test as prohibitive relative to FIT.

TABLE 3. Precancerous lesions of the colorectum

Lesion	Paris shape	Distribution in the colon	Prevalence	Pathology
Adenomas				
Traditional adenomatous polyps	1p (pedunculated)	Greater to left	Low	Mostly LGD
	1s (sessile)	Throughout	Common	
Flat lesions	2a (flat elevated)	Greater to right	Common	Mostly LGD
Depressed lesions	2c; 2a + 2c; 2c + 2a (depressed variants)	Greater to right	Rare	↑↑ HGD and invasive cancer
Serrated lesions				
Sessile serrated polyp[a]	1s or 2a (sessile or flat)	Greater to right	Common	Precancerous, although mostly without dysplasia
Traditional serrated adenoma	1s or 1p (sessile or pedunculated)	Greater to left	Rare	Relatively high risk of cancer

[a]Also called "adenoma" or "lesion."

Abbreviations: HGD, high-grade dysplasia; LGD, low-grade dysplasia.

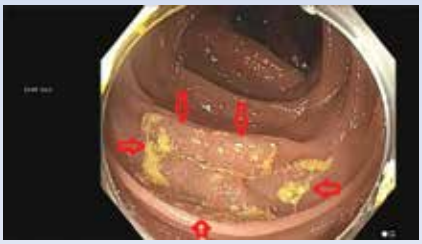
In the United States, the most common setting in which CRC screening occurs is called opportunistic, which refers to initiation of screening by a provider seeing a patient in an office or clinic setting. Opportunistic screening, using an annually administered test such as FIT, is often associated with a substantial reduction in adherence over time[37]—generally because systems are not in place to systematically remind patients and facilitate repeated screening.

Discussing screening options in the opportunistic setting

The discussion between clinician and patient about how to undergo screening follows several strategies, which are usually framed as the options of sequential testing, multiple options, and risk stratification.

In the sequential approach, the patient is first offered the test viewed as most effective—usually, colonoscopy.[2] Physicians should emphasize to patients that high quality colonoscopy is by far the most sensitive test for both precancerous polyps and cancer. While FIT misses approximately 1 in 5 cancers and FIT-fecal DNA misses about 1 in 13 cancers, high quality colonoscopy has a much lower risk of missing cancer. The sensitivity of colonoscopy for precancerous lesions in the colon is far higher than any other test. Even considering large precancerous lesions that all experts agree should be targets of screening, colonoscopy detects 3 times as many patients with these lesions compared to FIT and more than twice as many patients with these lesions as FIT-fecal DNA. Further, a negative colonoscopy is accompanied by no need for further screening for 10 years, an interval that is likely to expand in future guideline recommendations. The tolerability of bowel preparation for colonoscopy has improved significantly, the risk is extremely low in skilled hands, and in most practices the procedure is now performed essentially without pain. Primary screening colonoscopy is often covered 100% by insurance, whereas colonoscopy performed to follow up other tests is less likely to be covered

FIGURE 3. Advanced serrated lesions



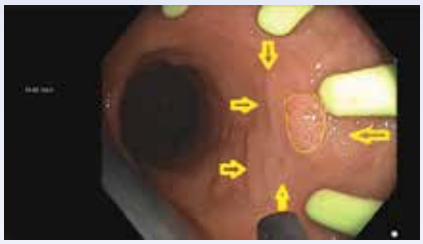
A Arrows delineate the border of a sessile serrated polyp with adherent mucus over the lesion and debris around the perimeter

B Right colon sessile serrated polyp with thick layer of adherent mucus – arrows delineate the borders

C Arrows delineate edges of a sessile serrated polyp without mucus cap

D Sessile serrated polyp without mucus cap, flatter than the lesion seen in image C

E Extremely flat, subtle sessile serrated polyp without cytological dysplasia



F Sessile serrated polyp with cytological dysplasia. The dysplastic portion is within the yellow line. Arrows mark the perimeter. Black object at bottom is tip of an injection catheter. Green objects are the fingers of a fold-flattening device placed on the end of the colonoscope to assist detection by improving mucosal exposure.

"Advanced" serrated lesions are defined as those with size ≥1 cm in diameter or histologically showing cytological dysplasia. Serrated lesions are considered more difficult than adenomas to detect at colonoscopy but colonoscopy far exceeds all other strategies in their detection.

without a co-pay. If the patient declines colonoscopy, a second test is offered—typically, FIT. The sequential approach has been shown to maximize overall screening adherence and adherence to the most effective test.[38-40]

In the multiple options approach, the pros and cons of 2 or more tests (typically colonoscopy and FIT) are presented to the patient, from which the patient chooses a screening test. In some studies, this approach has increased overall adherence to screening,[41] but not in several other studies.[42-44] Offering more than 2 options has not been shown to improve overall adherence,[45] and may be viewed as confusing. Furthermore, explaining more than 2 options is often viewed as impractical in a busy primary care practice.

The risk stratification approach is to offer colonoscopy to patients with a higher pretest chance of having precancerous polyps, such as

patients ≥60 years.[46,47] Younger patients with known risk factors for CRC might also be offered colonoscopy, such as those with obesity, diabetes, or a history of smoking. In this strategy, noninvasive testing, such as FIT, is recommended to younger patients who have a lower predicted risk of precancerous polyps and cancer. In this approach, factors that affect the false-positive rate of individual tests might also be considered. For example, DNA testing that includes methylation assays produces false-positive results related to background methylation that increases with age. Therefore, avoiding the FIT-fecal DNA stool test in older patients can be an appropriate strategy to reduce the risk of false-positive noninvasive screening. Risk stratification by artificial intelligence programs analyzing large electronic health record databases appears promising as an approach in the future to selecting patients most likely to benefit from primary colonoscopy screening.

There are no comparative trials between the approaches of sequential testing, multiple options, and risk stratification that indicate which approach leads to best adherence. Awareness of the different approaches can help PCPs frame discussions that are most appropriate for their practice or for individual patients

Why colonoscopy?

Colonoscopy has dominated CRC screening for the past 2 decades in the United States—and for good reason (**TABLE 4**). Case-control and cohort studies suggest that colonoscopy generally reduces the incidence of right-sided colon cancer by 40% to 60% when quality is good, and by >80% in the left colon.[2,48] No other test approaches the sensitivity of colonoscopy for precancerous lesions. Colonoscopy is the only test recommended at 10-year intervals, and a negative colonoscopy by a high-level performer can be associated with periods of protection much longer than 10 years.[49]

TABLE 4. Why colonoscopy dominates colorectal cancer screening in the United States

Most effective colorectal cancer *prevention* test
Sensitivity for polyp detection far exceeds that of all other tests
Allows single-session diagnosis and resection of precancerous lesions
Only test with sufficient sensitivity to be performed at a 10-year interval

Getting effective colonoscopy for your patients

Although average colonoscopy has the highest sensitivity for precancerous lesions of any test by a large margin, the protection afforded by high-quality colonoscopy is remarkably high.[50-52] However, colonoscopy performance is operator-dependent with regard to both detection and resection. Average performance by gastroenterologists consistently exceeds other specialties,[53-57] but there is variability in performance between gastroenterologists.[50,58,59] Detection performance can be quantified through a measure called the adenoma detection rate (ADR),[60,61] which should be measured by all colonoscopists performing screening colonoscopy. If your local endoscopy unit does not measure the ADR, it might be a signal of lack of commitment to quality. Recent USMSTF guidelines on CRC recommend that patients request the ADR from prospective colonoscopists[2]; PCPs can also pursue this information.

PCPs can also contribute to quality colonoscopy by educating patients about the importance of "split-dose" bowel preparation,[61] which refers to taking half the preparation on the day before colonoscopy and half on the day of colonoscopy. Timing of the second dose is usually to begin 4 or 5 hours before the scheduled time of colonoscopy. If the entire dose is taken the evening before colonoscopy, small intestinal secretions produced after the prep was ingested can enter the right colon. This intestinal chyme can form a tenacious layer that resists washing and obscures visualization of the mucosa. Because flat and depressed adenomas and serrated lesions are concentrated in the right colon, split-dosing is fundamental to effective colonoscopy; virtually any bowel preparation can be split.

Why FIT?

In organized screening programs, FIT is generally considered the test of choice.[36] The low cost of the test, sensitivity for cancer of 75% to 80% and for advanced adenomas of 30% to 40%, and a false-positive rate of about 4% make FIT comparable to colonoscopy in cost-effectiveness analyses.[20] In modeling studies, FIT is consistently more effective and cost effective than the FIT-fecal DNA stool test, so that FIT can be said to "dominate" the FIT-fecal DNA stool test.[1,2,22,62] The cost of FIT in the United States is typically $22, compared to $500 and up for the FIT-fecal DNA stool test. As noted, a recent systematic review and meta-analysis found that lowering the threshold to 10 µg hemoglobin per gram of feces provided a sensitivity for cancer of 91%, with a specificity of 90%.[28] These numbers are virtually equal to the performance of the available FIT-fecal DNA stool test, with a cost about 1/20th the cost of FIT-fecal DNA stool test.

FIT-fecal DNA stool test in perspective

Aggressive radio and television marketing of the first FIT-fecal DNA stool test (Cologuard) by its manufacturer, Exact Sciences, has led to significant use of the test. The test, although sometimes referred to as "multitarget stool DNA testing," is actually a combination of FIT and a fecal DNA stool test. The sensitivity of the FIT-fecal DNA stool test for cancer is 92%; for advanced adenomas, 42%; and for sessile serrated polyps ≥1 cm in diameter, 42%.[29] Most of the sensitivity of the test for cancers and large adenomas can be accounted for by the FIT component. The DNA assays add particularly to detection of serrated lesions, for which FIT is ineffective.

Other positive features of the combined FIT-fecal DNA stool test include the recommendation to perform the test at a 3-year interval, which reduces the burden on physicians in the opportunistic setting who are seeking to maintain a high level of adherence to screening in their patients. The company offers a navigation program, patients are called to encourage initial test completion, and both patients and ordering physicians are notified after 3 years when initial negative tests should be repeated.

There are also numerous limitations to the FIT-fecal DNA stool test (**TABLE 5**).[29] The increased

TABLE 5. Advantages and limitations of the FIT-fecal DNA stool test for colorectal cancer screening

Advantages
Noninvasive
High (92%) sensitivity for cancer
Recommended at 3-year intervals (compared to 1 year for FIT)
Limitations
Less sensitive for cancer than high-quality colonoscopy
Less sensitive for adenomas and serrated lesions than colonoscopy
High (12%) false-positive rate
False-positive rate increases with patient age
Expensive ($500) compared to FIT ($22)
Most of the sensitivity derives from the FIT, which itself is inexpensive
Dominated by FIT in cost models: FIT is more effective and cost-effective than the FIT-fecal DNA test
No evidence to support use outside of screening
Basis for positive results (FIT or DNA stool tests, or both) is not reported
Colonoscopy for positive FIT-fecal DNA test is considered "diagnostic"; patient might incur substantial out-of-pocket cost

Abbreviation: FIT, fecal immunochemical test.

sensitivity added by the DNA assays is accompanied by an overall false-positive rate of approximately 12%.[29] The false-positive rate increases with age, likely because of the methylation markers in the DNA assays. Therefore, the test is better in younger patients.

Regrettably, the FIT-fecal DNA stool test is reported as positive or negative only. It is impossible to ascertain as a clinician whether the positive test result is from the FIT or the DNA assays, or which DNA assay is positive. Positive results based on methylation assays should probably lead to not using the test again in that patient, because a hypermethylated colon is likely to persist. Because the individual components causing the positivity are not revealed in the result, it is best to assume that any positive test is from the methylation assays, and should result in the FIT-fecal DNA stool test not being repeated if colonoscopy is negative.

Importantly, the FIT-fecal DNA stool test is approved for use only as a screening test in asymptomatic persons. Anecdotally, clinicians often see PCPs using the test in patients with previous polyps and even cancer—a population in which its performance is uncertain and for which it lacks FDA approval.

Patients with a positive FIT-fecal DNA stool test or positive FIT must be referred for colonoscopy. Failure to refer in the absence of significant contraindications to colonoscopy creates cancer risk for the patient and medicolegal risk for the ordering physician. A practical challenge when screening with either FIT or the FIT-fecal DNA stool test is that the follow-up colonoscopy is often considered diagnostic by insurance companies, and is associated with a copay or coinsurance. The copay is typically waived for a primary screening colonoscopy. The high positivity rate of the FIT-fecal DNA stool test means this situation arises frequently with FIT-fecal DNA screening.

Summary

Colorectal cancer screening in the United States is performed largely by colonoscopy every 10 years or by FIT annually; recently, the FIT-fecal DNA stool test has received significant use, with a recommended interval of every 3 years. To use screening optimally, PCPs in the opportunistic setting should develop an approach to discussing screening tests with patients, which might follow the strategy of sequential testing, the multiple options approach, or a risk-stratified approach. Primary colonoscopy screening has numerous advantages, including the highest detection of precancerous lesions, the highest level of cancer prevention, and the longest interval of protection. PCPs should:

- understand the importance of colonoscopy for patients with a positive FIT or a positive FIT-fecal DNA stool test
- utilize FIT and FIT-fecal DNA stool testing for appropriate indications (ie, screening only)
- understand the limitations of non-colonoscopic screening.

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