

Colorectal cancer screening
Case presentation

Moderator:

F.Masour-Ghanaei,MD,AGAF

Panelists:

K.Aminian,MD

K.Mojtahedi,MD

M.Baghaee,MD

Gastrointestinal & Liver Diseases Research Center

Guilan University of Medical Sciences

2022

Case Presentation

- **46 years old Man referred for colorectal cancer screening w/o any personal or family history of colon cancer and w/o any symptoms, whats your comment?**

A:Recommended screening at now

B:Recommended screening at 5o years old

C:Both of them

D:Non of therm

In Average-Risk Individuals

1: Screen CRC between ages 50 and 75 years to reduce incidence of advanced adenoma, CRC, and mortality

Strong recommendation; moderate-quality evidence

2:Screen CRC between ages 45 and 49 years to reduce incidence of advanced adenoma,CRC, and mortality from CRC

Conditional recommendation; very low-quality evidence

QUESTIONS
In Average-Risk Individuals

1.What are effectiveness and harms of screening in reducing incidence of advanced neoplasia and CRC, and CRC mortality?

2.How does effectiveness vary by screening modality, age, race?

CRC screening in average-risk individuals starting at age 45 years

- Recent studies have highlighted a rising incidence of CRC in individuals younger than 50 years in the United States.

- Although CRC incidence has continued to decline in those age 50 years and older, the incidence rates have doubled in 20- to 49-year-olds

Advantage of screening at age 45 years

- An advantage of screening at age 45 years instead of 50 years includes reduced CRC risk due to early detection of CRC in this age group.

- Over time, detection and removal of polyps in age 45–49 years would reduce the incidence of CRC in those age 50 years and older.

- Preventing young CRC is a desirable goal because the societal impact of CRC death at an early age is particularly devastating.

Disadvantages of such an approach:

- The disadvantages of such an approach are the resources required to screen an additional individuals between ages 45 and 49 years and detracting from efforts to screen individuals age 50 years and older to reach the target goal of 80% set by the National Colorectal Cancer Roundtable

Case Presentation

- **46 years old Man referred for colorectal cancer screening w/o any personal or family history of colon cancer and w/o any symptoms, whats your comment?**

A:Recommended screening at now

B:Recommended screening at 5o years old

C:Both of them

D:Non of therm

Case Presentation

- **46 years old Man referred for colorectal cancer screening w/o any personal or family history of colon cancer and w/o any symptoms, whats your comment?**

A:Recommended screening at now

B:Recommended screening at 5o years old

C:Both of them

D:Non of therm

- Which of the following best for Patient screening?

A:Fecal OB

B:FIT

C:CT colonography

D:Total colonoscopy

E:FIT and if needed total colonoscopy

F:D and E

The “ideal” screening test?

- Should be noninvasive, have high sensitivity and specificity, be safe, readily available, convenient, and inexpensive.
- There are multiple approved tests and strategies, each with its strengths and weaknesses.
- In someinstances the“best”screening test can be considered the one that is acceptable to the patient and gets completed

Approach To CRC Screening

One approach to CRC screening tests is to divide them as:

1-Step (direct) tests(i.e., colonoscopy, which is diagnostic and therapeutic)

or

2-Step tests that require colonoscopy if positive, to complete the screening process. All screening tests other than colonoscopy are 2-step tests

what's the major limitation of non–colonoscopy-based CRC screening tests?

- A major limitation of non–colonoscopy-based CRC screening tests(eg, stool-based, flexible sigmoidoscopy, CT colonography [CTC],or colon capsule [CC]) is that a positive test requires a follow-up colonoscopy.

- This 2-step testing approach represents a continuum of screening, requires strong systems-based support to complete the screening cascade, and is more effectively applied in organized screening .

- Options for CRC screening currently in use, which mainly include colonoscopy, and in an organized setting, fecal immunochemical test (FIT).

Other 2-steptests such as:

- Flexible sigmoidoscopy, multi target stool DNA test,CTC, and CC are reserved for individuals unwilling or unable to undergo colonoscopy or FIT, or those with incomplete colonoscopy(CTC or CC).
- Comparative effectiveness studies are lacking.

ONE-STEP SCREENING

- Colonoscopy is the most commonly performed gastrointestinal procedure.
- It allows for not only the detection of early-stage cancers but also the detection and removal of polyps and confers a long-term protection from CRC incidence and mortality.

Stool- And Blood-Based Tests

	Performance characteristics	Pros	Cons
Stool- and blood-based tests			
FIT[a]	79% sensitivity and 94% specificity for CRC	Noninvasive No risk of complications Can be done at home Programmatic screening possible	Positive results require colonoscopy Needs to be repeated annually Low sensitivity for advanced adenomas Does not detect serrated lesions
mtsDNA stool test	92% sensitivity and 87% specificity for CRC Long-term reduction in CRC incidence and mortality is unknown	Noninvasive No risk of complications Can be done at home Better sensitivity for advanced adenomas and large serrated lesions than FIT alone	Positive results require colonoscopy Repeat interval unknown but 3 years proposed More expensive than FIT alone Concern for overtesting and harms from a positive test and negative colonoscopy
Septin 9	48% sensitivity and 91% specificity for CRC Long-term reduction in CRC incidence and mortality is unknown	Minimally invasive No risk of complications Can be added to routine blood draw	Low sensitivity for CRC Repeat interval unknown Positive results require colonoscopy

Blood-based tests
{Septin 9}

- A blood-based test assessing methylated Septin 9 is FDA approved for CRC screening in average-risk individuals age 50 years or older who refuse other CRC screening methods.

- Given the low sensitivity and the lack of longitudinal and comparative data on test performance, the test is not considered an optimal screening modality at this time

Direct visualization tests

Direct visualization tests			
Colonoscopy	100% detection rate for CRC. Reported incidence of PCCRC 3%–9% Long-term reduction in CRC incidence 31%–71% and CRC mortality 65%–88% from observational studies	Diagnostic and therapeutic Can detect cancers and precursor polyps Infrequent repeat interval (q10 years) possible	Operator dependent Requires bowel preparation and sedation Risk of complications 4–8 in 10,000
Flexible sigmoidoscopy	90%–100% sensitivity for distal colon CRC Long-term reduction in CRC incidence 21%; reduction in CRC mortality 26%	Less invasive than colonoscopy Low risk of complications	Positive results require colonoscopy Needs to be repeated every 5–10 years Requires enema preparation
CT colonography	90%–100% for CRC Variable sensitivity for polyps, poor sensitivity for flat lesions and sessile serrated lesions	Less invasive than colonoscopy Does not require sedation Lower risk of complications than colonoscopy	Positive results require colonoscopy Requires bowel preparation Followup may be required for extracolonic findings Limited availability of trained radiologists across the United States
colon capsule	81% sensitivity and 93% specificity for polyps ≥6 mm	Minimally invasive Does not require sedation Newer generation tests can be done at home	Requires bowel preparation Positive examinations require colonoscopy Repeat interval unknown

- Which of the following best for Patient screening?

A:Fecal OB

B:FIT

C:CT colonography

D:Total colonoscopy

E:FIT and if needed total colonoscopy

F:D and E

- Which of the following best for Patient screening?

A:Fecal OB

B:FIT

C:CT colonography

D:Total colonoscopy

E:FIT and if needed total colonoscopy

F:D and E

- Total colonoscopy was performed with good quality that seems be completely normal ,whats the best time for repeated colonoscopy?

A:3 years later

B:5 years later

C:1o years later

D:Non of them

Strong recommendation for interval screening

- **FIT every 1 year**
- **Colonoscopy every 10 years**

Conditional recommendation for interval screening

- Multitarget stool DNA test every 3 years
- Flexible sigmoidoscopy every 5–10 years
- CTC every 5 years
- CC every 5 years

- Total colonoscopy was performed with good quality that seems be completely normal ,whats the best time for repeated colonoscopy?

A:3 years later

B:5 years later

C:1o years later

D:Non of them

Answer

- Total colonoscopy was performed with good quality that seems be completely normal ,whats the best time for repeated colonoscopy?

A:3 years later

B:5 years later

C:1o years later

D:Non of them

A 35 ys old woman came to your office with her Father (65 Ys)

FH; The son of this family had polyp at the age 30

Drug H;The father is taking losartan ,ASA.

Multivitamin mineral Lab; CBC ,RFT, LFT, A1c, Iron profile were normal

What age do you recommended for CRC risk assessment(Initial visit)?

- We assess the risk for CRC at the initial visit for an adult who is age 20 years or older to identify high-risk patients who should begin CRC screening at an earlier age than those at average risk. Subsequent reassessment every three to five years.

What age do you recommend for cancer screening?

- We recommend that average-risk patients over the age 50 years be screened for CRC.

What do we call average risk?

- Factors important to determine increased CRC risk can be assessed by asking several questions. A "no" response to all of these questions generally indicates average risk.

What factors are important to determine the risk?

- 1-A personal history of CRC increases the risk of another primary (metachronous) cancer.

What does metachronous mean?

- Metachronous adenomas and colorectal cancer diagnosed six months after removal of an index cancer or polyp)

2-Have any biologic family members had CRC or a documented advanced polyp?

An advanced polyp is defined as:

advanced adenoma (adenoma ≥1 cm, or with high-grade dysplasia, or with villous elements) or polyp requiring surgical excision, or advanced serrated lesion (sessile serrated polyp [SSP] ≥1 cm, or traditional serrated adenoma ≥1 cm, or SSP with cytologic dysplasia).

They have no information about the type of polyp is in family is the daughter considered average risk

- If a biologic family member is reported to have had a polyp but there is lack of available documentation about the type of polyp, the patient is typically screened as if a family member did not have an advanced polyp.
- If the patient cannot obtain any family history whatsoever related to colorectal cancer or polyps, some experts suggest screening the patient as average risk, although there are no data that evaluate that approach

- 3-Do you have inflammatory bowel disease (ulcerative colitis or Crohn disease)?

- 4-Adults who received abdominal radiation in childhood for malignancy are at increased risk of CRC
- 5-HIV infection in men – HIV-infected male patients have an increased risk for anal neoplasia (though not for colon cancer) compared with the general population
- 6- Race;African-American patients

The father should be screened for CRC

Which screening test do you recommended?

- Colonoscopy(every 10 ys) is the definitive test for detection of precancerous adenomas and CRC with high sensitivity and acceptable specificity
- The patient does not have a colonoscopy

What other options do you suggests?

- FIT(Fecal immunochemical test for blood) annually
- Guaiac based fecal occult blood test(gFOBT) annually
- Multitargete stool DNA tests with FIT every three ys
- Sigmoidoscopy every five ys
- CTC every 5 ys
- Colon capsule endoscopy
- Blood based markers

Does the Medication (ASA and Multivitamin) interfere with the stool test?

- However, vitamin C intake should be restricted to <250 mg per day (which is less than the typical dose in a multivitamin) for at least three days prior to sampling for gFOBT(identifies hemoglobin).Large doses of vitamin C may cause false-negative tests
- We do not ask patients to hold NSAIDs (including aspirin) or other antiplatelet therapy when collecting stool for gFOBT. By contrast, the manufacturer recommends that patients avoid NSAIDs (other than one aspirin per day) for seven days prior to the test

The patient performed a FIT test

- FIT requires only one stool sample and does not require restrictions to medications or diet prior to providing the sample; foods with peroxidase activity do not produce a false-positive FIT. Aspirin and other NSAIDs generally do not need to be temporarily discontinued
- We suggest FIT that generates a quantitative result rather than only a qualitative result, if available in the clinician's location
- The patient may obtain the specimen collection kit at the clinician's office, pharmacy, or by mail, depending on the protocol of the clinician's office. The patient returns the FIT container (often by mail) to a laboratory for testing. Patients should be advised to return it within 24 hours of collection, because FIT sensitivity declines with delayed return after sampling

FIT test is positive , what is your next step?

- A patient with any positive (ie, abnormal) screening test for colorectal cancer (CRC) other than colonoscopy itself requires a timely colonoscopy to evaluate for colon polyps and CRC

Do you recommended repeating the FIT test?

- If a stool-based test (fecal immunochemistry test [FIT], guaiac-based fecal occult blood test [gFOBT], or FIT-DNA multitarget stool DNA testing [MT-sDNA]) is positive, a second stool test **should not be** done instead of a diagnostic colonoscopy, because a subsequent negative stool test result does not mean that the first result was a false positive

Do you recommended upper endoscopy ?

- Additionally, if the patient has GI symptoms or signs (eg, iron deficiency anemia, upper gastrointestinal symptoms), a diagnostic evaluation is indicated
- FIT appears to be less sensitive for detection of right-sided than of left-sided lesions
- In addition, a positive FIT has high specificity for lower GI bleeding. However, FIT can be positive due to an upper GI bleed that is large enough for hemoglobin to escape degradation during transit

His daughter is getting married two weeks later. How long does it take for the old man to have a colonoscopy?

- Performing the colonoscopy promptly and within three months is advised.

Colonoscopy was done but preparation was poor

What is the criterion for bowel preparation?

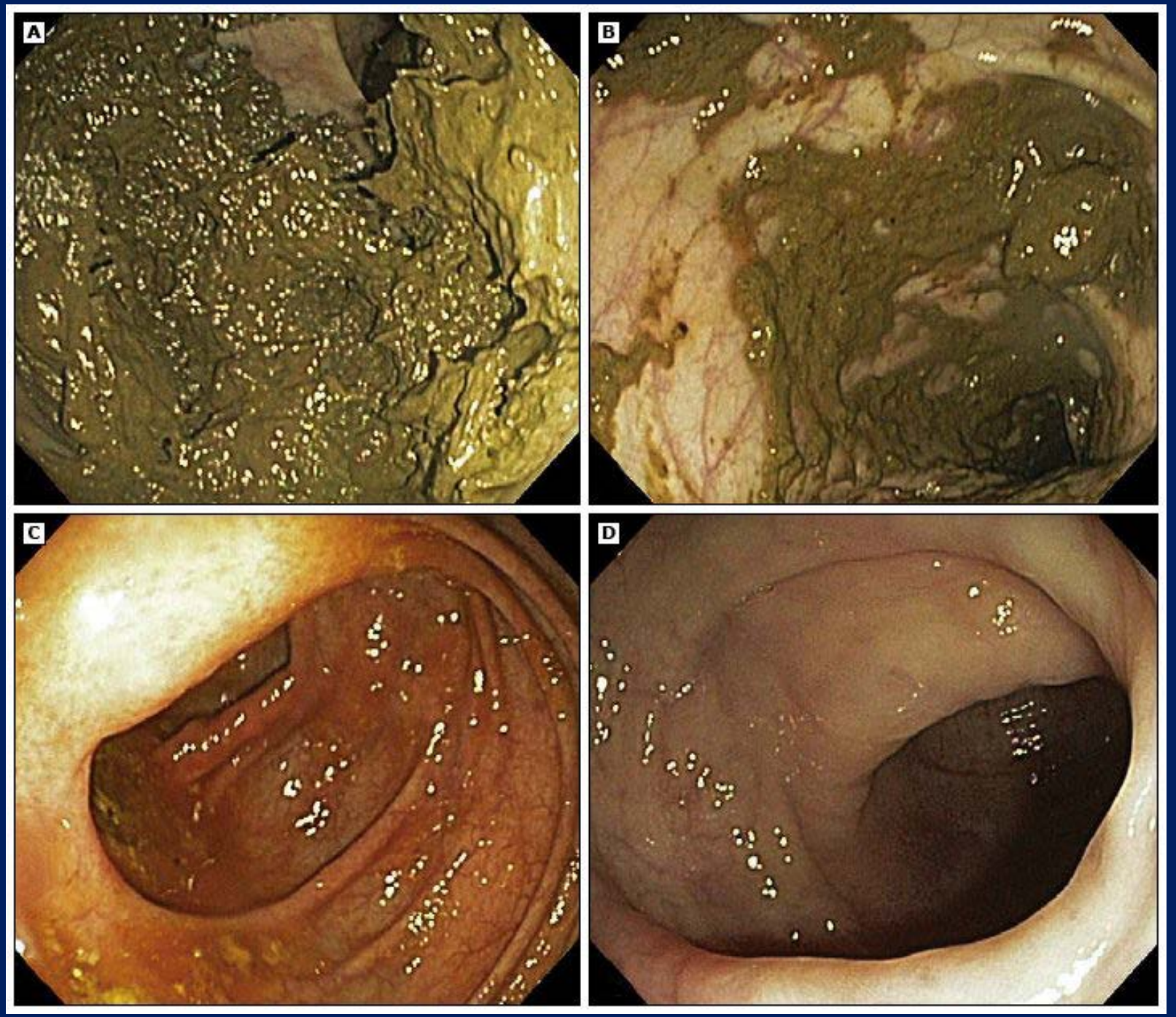
- Colonoscopy is performed by a trained clinician using a flexible fiberoptic endoscope to directly visualize the inside of the rectum, colon, and a portion of the terminal ileum
- Disadvantages of colonoscopy as a screening test include the inconvenience of bowel preparation
- The effectiveness of the bowel preparation is a critical factor related to the safety, diagnostic accuracy, quality, difficulty, and speed of the examination

- To standardize descriptions of bowel preparation at the time of colonoscopy, systems for reporting bowel preparation quality have been developed, including the Boston bowel preparation scale
- **What is Boston bowel preparation scale(BBPS)?**

- The Boston Bowel Preparation Scale (BBPS) is a bowel cleanliness rating scale originally designed and validated for use during colonoscopy-oriented research. It relies on the summation of three individual colonic segment scores (from the right, transverse and left colons) to indicate the degree of bowel visualization

- The score ranges from 0 to 3 for individual colonic segments: the right side of the colon (including the cecum and ascending colon), the transverse section of the colon (including the hepatic and splenic flexures), and the left side of the colon (including the descending colon, sigmoid colon, and rectum).

- These segment scores are summed for a total Boston bowel preparation scale score, which ranges from 0 (poor) to 9 (excellent):
- Score 0: Unprepared colon with mucosa not seen because of solid stool that cannot be cleared
- Score 1: Portion of the mucosa of the colon segment seen, but other areas of the colon segment not seen well because of staining, residual stool, and/or opaque liquid
- Score 2: Minor amount of residual staining, small fragments of stool and/or opaque liquid, but most mucosa of the colon segment seen well
- Score 3: Entire mucosa of colon segment seen well with no residual staining, small fragments of stool, and/or opaque liquid


A
B
C
D

When to reapet colonoscopy?

- Some experts wait six months to repeat a colonoscopy if a poor preparation limited visibility of the colon mucosa

Second colonoscopy was done with good preparation and colonoscopy was normal

How long should the screening test continue?

- We continue to screen for CRC through age 75 years for average-risk patients, as long as their life expectancy is 10 years or greater.


Thank you for your attention