

Get Screened!

Approved Methods for Colon Cancer Screening: A Case Based/Evidence Based Approach

Presented By:
Gastroenterology Department
Licking Memorial Health Systems



OBJECTIVES:

- To discuss different methods of colon and rectal cancer (CRC) screening using clinical vignettes.
- To provide the newest evidence supporting current CRC screening guidelines.
- To compare and contrast best available screening methods.
- To summarize the best available approach at CRC screening.



The best screening test for CRC
prevention is.....

the screening test that gets.....

DONE...WELL!

S. Winawer, Past President ACG



Vignette #1

A 53 year old man with hyperlipidemia comes for his annual wellness visit. He recently found that his mother had colon polyps. He is asking about colon cancer screening. What screening options are currently available?



What screening options are currently available?

A. Colonoscopy q 10 years,
Flex sigmoid q 5 years,
FIT test q 3 years,
FIT DNA yearly,
CT colonography q 5 years.

B. Colonoscopy q 10 years,
FLEX sigmoid q 5 years,
FIT test yearly,
FIT-DNA q 3 years,
Capsule endoscopy q 5 years

0%

0%



WHO & WHEN

- Age: 50
- Race: African Americans > Whites
- Gender: Men > Women (advanced adenoma: 8.0 vs. 4.3%; CRC 1.4 vs 0.6%)
- Specific clinical risk factors:
 - Inflammatory bowel disease
 - Prior colon cancer/polyps; hamartomas
 - Abdominal radiation in childhood Radiotherapy for prostate cancer
 - Endometrial cancer; HIV infected male patients



USPSTF

Population	Recommendation	Grade (What's This?)
Adults aged 50 to 75 years	<p>The USPSTF recommends screening for colorectal cancer starting at age 50 years and continuing until age 75 years.</p> <p>The risks and benefits of different screening methods vary. See the Clinical Considerations section and the Table for details about screening strategies.</p>	A
Adults aged 76 to 85 years	<p>The decision to screen for colorectal cancer in adults aged 76 to 85 years should be an individual one, taking into account the patient's overall health and prior screening history.</p> <ul style="list-style-type: none">• Adults in this age group who have never been screened for colorectal cancer are more likely to benefit.• Screening would be most appropriate among adults who 1) are healthy enough to undergo treatment if colorectal cancer is detected and 2) do not have comorbid conditions that would significantly limit their life expectancy.	C



USPSTF vs Multi-Society Task Force



Table. Characteristics of Colorectal Cancer Screening Strategies^a

Screening Method	Frequency ^b	Evidence of Efficacy	Other Considerations
Stool-Based Tests			
gFOBT	Every year	RCTs with mortality end points: High-sensitivity versions (eg, Hemocult SENZA) have superior test performance characteristics than older tests (eg, Hemocult II)	Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)
FIT ^c	Every year	Test characteristic studies: Improved accuracy compared with gFOBT Can be done with a single specimen	Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)
FIT-DNA	Every 1 or 3 y ^d	Test characteristic studies: Specificity is lower than for FIT, resulting in more false-positive results, more diagnostic colonoscopies, and more associated adverse events per screening test Improved sensitivity compared with FIT per single screening test	There is insufficient evidence about appropriate longitudinal follow-up of abnormal findings after a negative diagnostic colonoscopy; may potentially lead to overly intensive surveillance due to provider and patient concerns over the genetic component of the test
Direct Visualization Tests			
Colonoscopy ^e	Every 10 y	Prospective cohort study with mortality end point	Requires less frequent screening Screening and diagnostic follow-up of positive findings can be performed during the same examination
CT colonography ^f	Every 5 y	Test characteristic studies	There is insufficient evidence about the potential harms of associated extracolonic findings, which are common
Flexible sigmoidoscopy	Every 5 y	RCTs with mortality end points: Modeling suggests it provides less benefit than when combined with FIT or compared with other strategies	Test availability has declined in the United States
Flexible sigmoidoscopy with FIT ^c	Flexible sigmoidoscopy every 10 y plus FIT every year	RCT with mortality end point (subgroup analysis)	Test availability has declined in the United States Potentially attractive option for patients who want endoscopic screening but want to limit exposure to colonoscopy



Multi-Society Task Force:2017

ACG, AGA, ASGE

Tier 1
Colonoscopy every 10 years
Annual fecal immunochemical test
Tier 2
CT colonography every 5 years
FIT-fecal DNA every 3 years
Flexible sigmoidoscopy every 10 years (or every 5 years)
Tier 3
Capsule colonoscopy every 5 years
Available tests not currently recommended
Septin 9



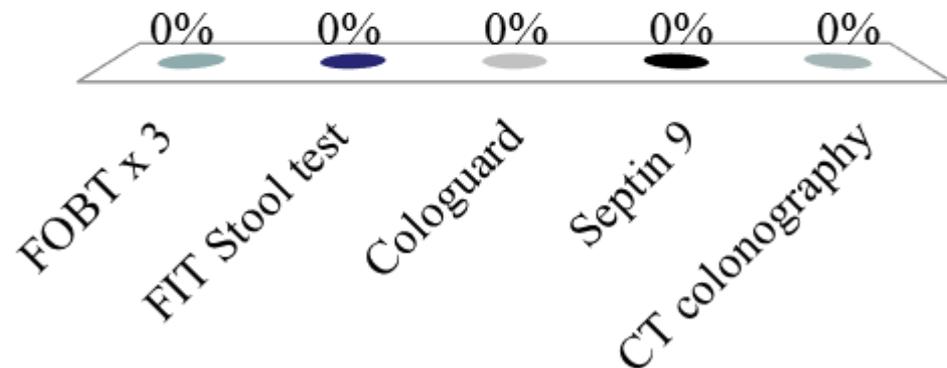
Vignette # 2

A 53 year old man with hyperlipidemia comes for his annual wellness visit. He recently found that his mother had colon polyps. He is asking about colon cancer screening. After discussing the most current options available for colon cancer screening. He indicated that he only wants noninvasive screening. Which is not a recommended screening test?



Which is not a recommended screening test?

- A. FOBT x 3
- B. FIT Stool test
- C. Cologuard
- D. Septin 9
- E. CT colonography



NON INVASIVE SCREENING



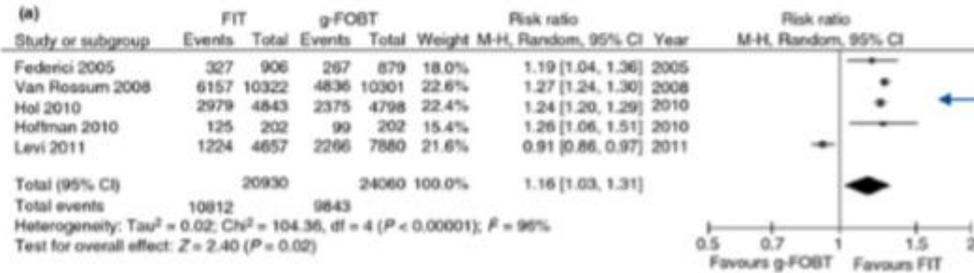
Table. Characteristics of Colorectal Cancer Screening Strategies^a

Screening Method	Frequency ^b	Evidence of Efficacy	Other Considerations
Stool-Based Tests			
gFOBT	Every year	RCTs with mortality end points: High-sensitivity versions (eg, Hemoccult SENSE) have superior test performance characteristics than older tests (eg, Hemoccult II)	Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)
FIT ^c	Every year	Test characteristic studies: Improved accuracy compared with gFOBT Can be done with a single specimen	Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)
FIT-DNA	Every 1 or 3 y ^d	Test characteristic studies: Specificity is lower than for FIT, resulting in more false-positive results, more diagnostic colonoscopies, and more associated adverse events per screening test Improved sensitivity compared with FIT per single screening test	There is insufficient evidence about appropriate longitudinal follow-up of abnormal findings after a negative diagnostic colonoscopy; may potentially lead to overly intensive surveillance due to provider and patient concerns over the genetic component of the test

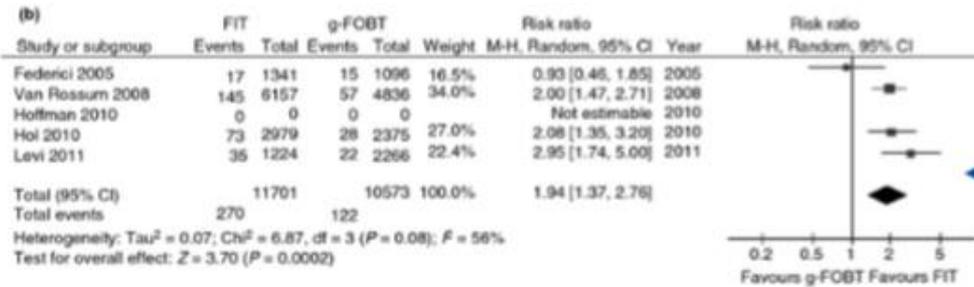
JAMA 2016



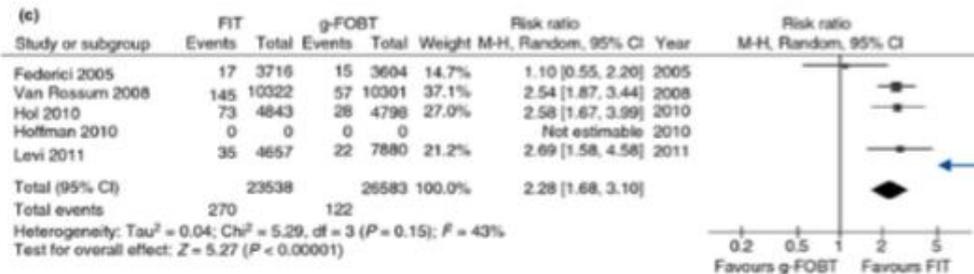
FIT vs FOBT



Attendance Rate



Detection Rate
Advanced Neoplasia
w/o adjustment for
Attendance Rate



Detection Rate
Advanced Neoplasia
w/adjustment for
Attendance Rate



FIT-DNA vs FIT

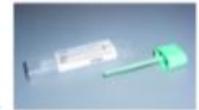
FIT-DNA

- ⌘ Higher Sensitivity
- ⌘ 3 year interval proposed
- ⌘ Requires UPS shipment
- ⌘ Patient navigator system included
- ⌘ FDA approved
- ⌘ Covered by Medicare
- ⌘ Commercial insurance coverage?



FIT

- ⌘ Higher Specificity
- ⌘ Lower cost
 - ⌘ \$8 vs >\$500+
- ⌘ Can be sent through mail
- ⌘ Easy to be used annually
- ⌘ Covered by guidelines (annual)
- ⌘ HEDIS



Colonoscopy vs Stool DNA vs FIT

Table 1. Sensitivity and Specificity of the Multitarget Stool DNA Test and the Fecal Immunochemical Test (FIT) for the Most Advanced Findings on Colonoscopy.

Most Advanced Finding	Colonoscopy (N=9989)	Multitarget DNA Test (N=9989)		FIT (N=9989)	
		Positive Results	Sensitivity (95% CI)	Positive Results	Sensitivity (95% CI)
		<i>no.</i>	%	<i>no.</i>	%
Colorectal cancer					
Any	65	60	92.3 (83.0–97.5)	48	73.8 (61.5–84.0)
Stage I to III*	60	56	93.3 (83.8–98.2)	44	73.3 (60.3–83.9)
Colorectal cancer and high-grade dysplasia	104	87	83.7 (75.1–90.2)	66	63.5 (53.5–72.7)
Advanced precancerous lesions†	757	321	42.4 (38.9–46.0)	180	23.8 (20.8–27.0)
Nonadvanced adenoma	2893	498	17.2 (15.9–18.6)	220	7.6 (6.7–8.6)
			Specificity (95% CI)		Specificity (95% CI)
All nonadvanced adenomas, non-neoplastic findings, and negative results on colonoscopy	9167	1231	86.6 (85.9–87.2)	472	94.9 (94.4–95.3)
Negative results on colonoscopy	4457	455	89.8 (88.9–90.7)	162	96.4 (95.8–96.9)

* These stages of colorectal cancer, as defined by the system recommended by the American Joint Committee on Cancer, are associated with an increased rate of cure.

† Advanced precancerous lesions include advanced adenomas and sessile serrated polyps measuring 1 cm or more.



Recommendation from Multi-Society Task Force:

Persons with 1 or more first-degree relatives with CRC or documented advanced adenomas, for whom we recommend colonoscopy, should be offered annual FIT if they decline colonoscopy (strong recommendation, moderate quality evidence)

Rex, et. al AJG 2016



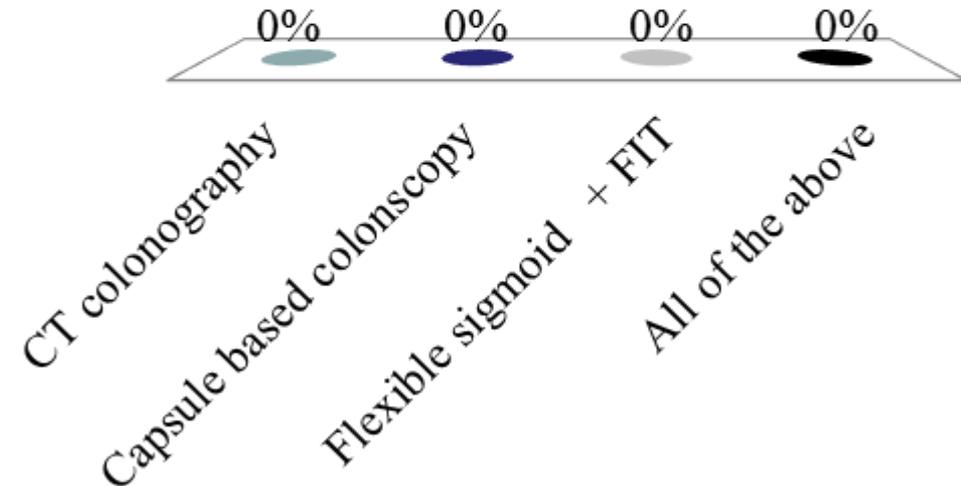
Vignette #3

Patient eventually had a colonoscopy, however, the colon was tortuous and colonoscopy was not completed and only reached the splenic flexure by the only gastroenterologist in town. What will be an appropriate option for CRC screening?



What will be an appropriate option for CRC screening?

- A. CT colonography
- B. Capsule based colonoscopy
- C. Flexible sigmoid + FIT
- D. All of the above



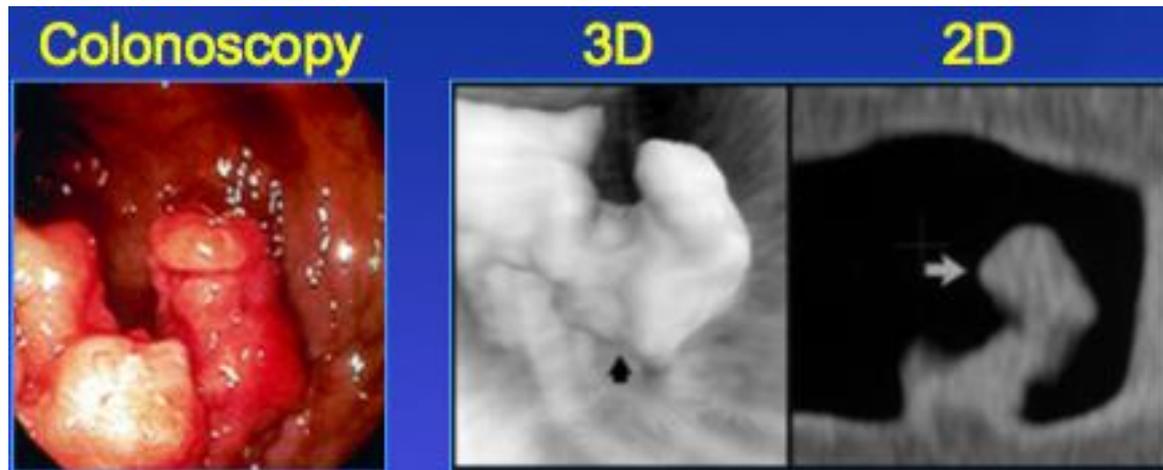
CT Colonography

INDICATIONS	CONTRAINDICATIONS
<ul style="list-style-type: none">• Average risk on anticoagulation• Increased risk for complications due to comorbidities• Incomplete colonoscopy	<ul style="list-style-type: none">• Intestinal obstruction• Suspected peritonitis• Recent abdominal surgery• Pregnancy• Iodinated contrast allergy

Sato K et. al Asian J Surg, 2016



CT Colonography: CRC



CT Colonography for CRC Screening

- ACRIN: Multicenter to evaluate CTC performance outside of academic centers
 - 2500 asymptomatic patients
 - CTC sensitivity 90% for polyps $\geq 10\text{mm}$
- 900 patients: CTC had a NPV of 96.3% compared to OC for advanced lesions
- Sensitivity comparable to colonoscopy and superior to FS, FIT and FOBT

Johnson D, NEJM 2008 359:12

Regge D JAMA 2009 301:2453

Graser A Gut 2009; 58:241-248



CT Colonography

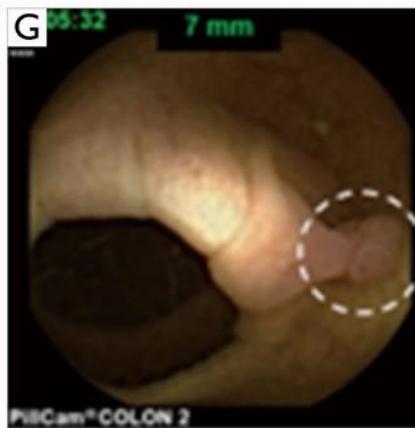
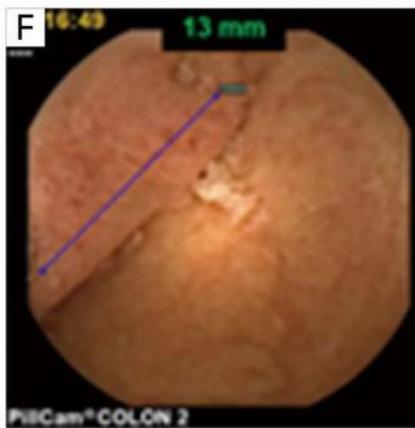
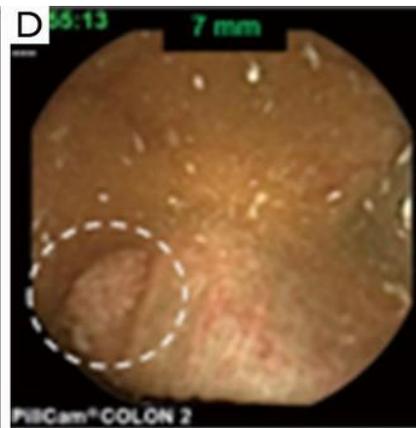
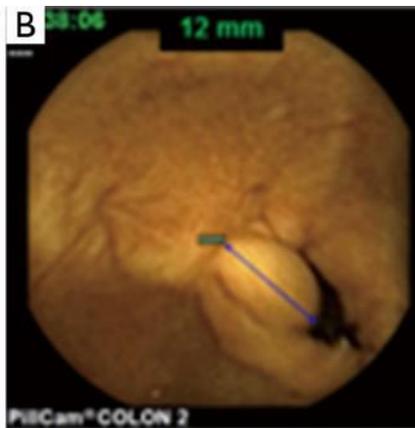
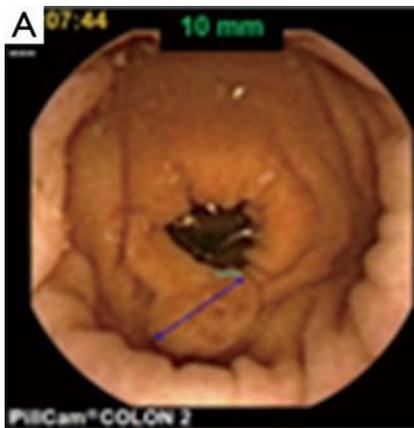
- Advantages
 - Non-invasive, with 5 year performance interval
 - Sensitivity of 82-92% for adenomas ≥ 1 cm
 - Can be performed the same day as a colonoscopy
 - Performed safely in anticoagulated patients
- Disadvantages
 - Radiation but low cancer risk
 - Sensitivity for polyps < 1 cm and detection of flat and serrated polyp is poor
 - Air insufflation required
 - Purely diagnostic, potential for extracolonic findings



Colon Capsule Endoscopy

- FDA approved for incomplete colonoscopy or who can't undergo sedation
- Cameras on both ends with 172 degree angle coverage
- Measures 31.5x11.6mm
- Battery life: 10 hrs





Colon Capsule as CRC Screening

- Multi-center prospective study detecting accuracy for polyps \geq in 884 average risk subjects
 - Conventional adenomas $\geq 6\text{mm}$
 - 88% sensitivity (95% CI 82-93%)
 - 82% specificity (95% CI 80-83%)
 - Conventional adenomas $\geq 10\text{mm}$
 - 92% sensitivity (95% CI 82-97%)
 - 95% specificity (95% CI 94-95%)
 - Sessile serrated and hyperplastic polyps accounted for 26% and 37% respectively, of false negative findings
- Technical failures in 9%

Rex D et al Gastro 2015



CCE Limitations

- More intense bowel preparation
 - 4 liters PEG solution
 - Capsule swallowed
 - Additional laxatives and prokinetic agents
 - Adverse events in up to 8% of patients mainly related to bowel preparation
- Technical failures
- Detection of serrated lesions limited
- Difficulty performing same day colonoscopy for positive capsule results



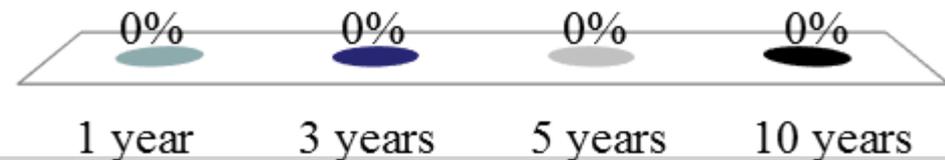
Vignette #4

The patient eventually had a completed colonoscopy. He was found to have a sessile serrated adenoma without dysplasia measuring 8mm in the transverse colon. He is asking when he should come back for another colonoscopy?

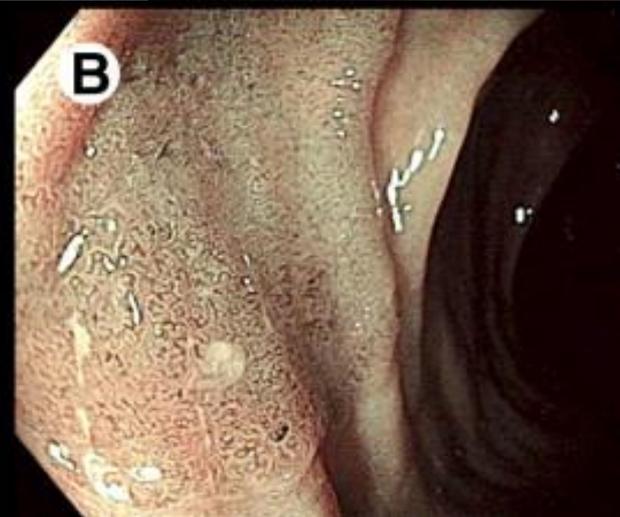
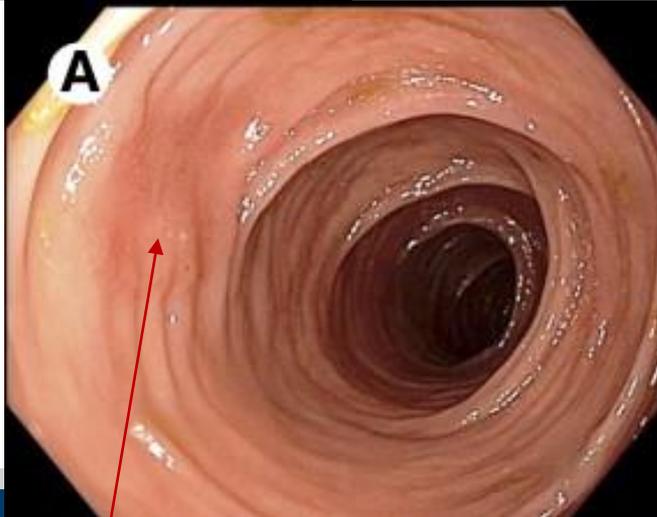
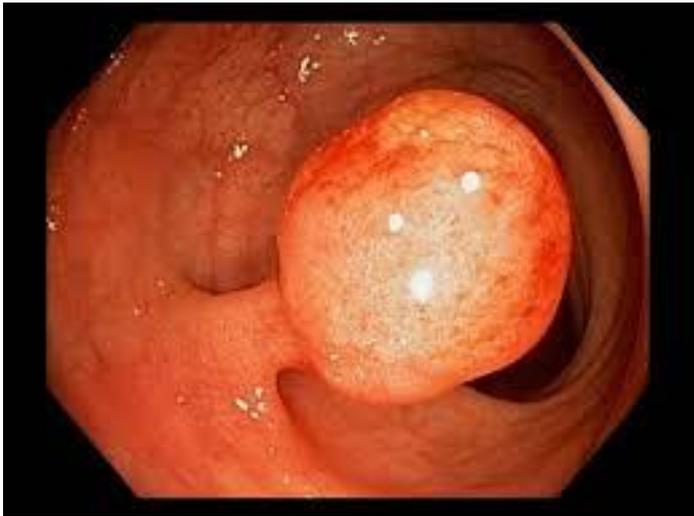


When should he come back for another colonoscopy?

- A. 1 year
- B. 3 years
- C. 5 years
- D. 10 years



Changing Landscape of Polyp Detection



Vignette #5

Your patient brings his 83 year old father who never had a colonoscopy to get colon cancer screening. He has HTN, CAD x 2 stents on Plavix. Will you order a screening test?



Will you order a screening test?

A. Yes

B. No



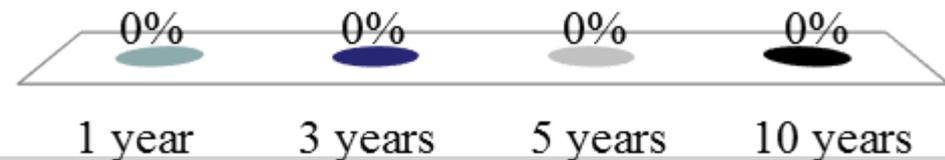
Vignette #6

Your patient's sister wants to know when to come for surveillance colonoscopy. She was found to have a tubular adenoma (5mm) at age 50. Colonoscopy after 5 years found no polyps which was done 3 weeks ago. When should a follow up colonoscopy be performed?



When should a follow up colonoscopy be performed?

- A. 1 year
- B. 3 years
- C. 5 years
- D. 10 years



US Multi-Society Task Force on Colorectal Cancer (MSTF) Guidelines for Surveillance of Patients with Serrated Polyps [10]

Size/Histology of Serrated Polyp	Colonoscopy Surveillance Interval (years)
Small (<1cm) HPs in rectosigmoid	10
Small SSPs without dysplasia	5
Large (\geq 1cm) SSP without dysplasia*	3
Any SSP-CD	3
Any TSA	3
Serrated Polyposis Syndrome	1

Abbreviations: HP, hyperplastic polyp; SSP, sessile serrated polyp; SSP-CD, sessile serrated polyp with cytologic dysplasia; TSA, traditional serrated adenoma; SPS, Sessile Serrated Polyposis.

*Large (\geq 1 cm) proximal serrated polyps can be considered SSPs even if they are pathologically designated HPs.



Summary:

- CRC is preventable if adenomas are detected and removed
- CRC is curable if detected early
- The best method of prevention is the one that gets done WELL.

