Time To Talk About Number Two! An Update On Colorectal Cancer Screening

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Questions

A 40 year old male with no past medical history presents to establish care. He recently got a new job with health insurance and requests a physical, labs and asks about screening. He has no acute problems, but states his father was diagnosed with colon cancer at age 51. At what age and what method would be the correct recommendation to start colorectal cancer screening?

- Start screening now with yearly FIT.
- Start screening with colonoscopy at age 50.
- Start screening with colonoscopy at age 41.
- Start screening at age 45 with yearly FIT.

Questions

A 58 year old male presents to your clinic with complaints of low back pain after helping his neighbor harvest pears from their pear tree. During the visit, he states he has seen a lot of commercials for Cologuard and asks about colon cancer screening. Which of the following statements is correct regarding screening?

- Cologuard is available for every 5 year stool based testing.
- The strongest recommendation for stool based testing is the FIT test yearly.
- Due to starting screening late, you will need more frequent colonoscopies.
- Cologuard and FIT testing detect precancerous polyps as well as colonoscopy.

Questions

A 46 year old female comes to your office for her annual exam. When you recommend she start colonoscopy screenings this year, she is surprised and asks you why she has to start now instead of 50. You tell the patient that

- People born around 1990 have a 3x increased risk of colon cancer
- Starting screening from the age of 45 can increase life expectancy by up to 25 years
- The incidence rates have tripled in 20 to 49 years old
- She needs a colonoscopy because you want to stay on your A game and close all your care gaps

Questions

A 77 year old male with a PMH of HTN, BPH, and low grade non-Hogdkin's lymphoma that is currently in remission returns to your clinic for his annual preventative exam. He tells you his last colonoscopy was 10 years ago and is eager to know if he needs to return for a repeat colonoscopy this year. When would you recommend stopping screening in this patient?

- Continue CRC screenings every 10 years regardless of age
- Stop CRC screenings today as he is past the recommended age for screening
- Recommend CRC screening if his current life expectancy is at least 7-10 years
- Stop CRC screening today but start the patient on ASA to decrease the risk of developing the disease as he has no risks for GI bleed

Questions

Which screening interval for CRC is FALSE?

- FIT test every year
- Cologuard every 3 years
- Colon capsule every 3 years
- Flexible sigmoidoscopy every 5-10 years

Questions

A 54 year old female comes in for her routine Pap smear. During the visit, she tells you she has heard aspirin is the miracle drug and she wonders if she should start taking it. When would you recommend aspirin for this patient?

If her ASCVD risk was 10% and she tells you she only wants to take it until she turns 60

If her ASCVD risk was 15% and she had a history of cirrhosis

If her ASCVD risk was 7.5% and she had no increased risk of bleeding

If her ASCVD risk was 12% and she had no increased risk of bleeding

Incidence

Colon Cancer is the 3rd most common cancer in both men and women in the US

25% higher incidence in men compared to women and 20% higher incidence in African Americans compared to Caucasians

Lifetime risk of average patient 4%

Decline in incidence by 1.7% and in mortality 3.2% annually
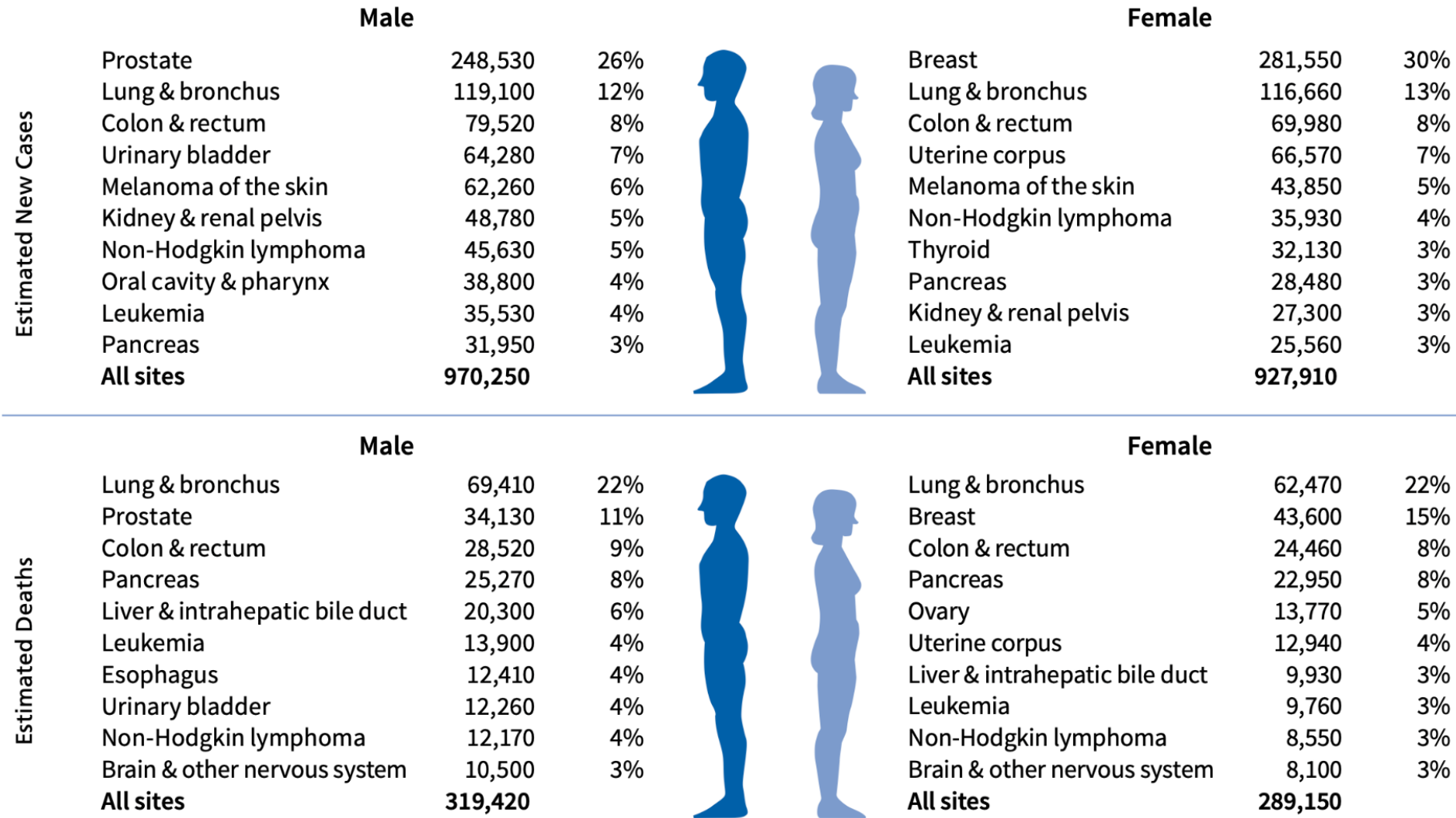
Gradual shift towards proximal colon cancers

70% sporadic CRC develop from adenomatous polyps

25-30% of sporadic CRC develop from sessile serrated lesions

Figure 3. Leading Sites of New Cancer Cases and Deaths – 2021 Estimates

Estimated New Cases

Male

Site	Cases	%
Prostate	248,530	26%
Lung & bronchus	119,100	12%
Colon & rectum	79,520	8%
Urinary bladder	64,280	7%
Melanoma of the skin	62,260	6%
Kidney & renal pelvis	48,780	5%
Non-Hodgkin lymphoma	45,630	5%
Oral cavity & pharynx	38,800	4%
Leukemia	35,530	4%
Pancreas	31,950	3%
All sites	**970,250**	

Female

Site	Cases	%
Breast	281,550	30%
Lung & bronchus	116,660	13%
Colon & rectum	69,980	8%
Uterine corpus	66,570	7%
Melanoma of the skin	43,850	5%
Non-Hodgkin lymphoma	35,930	4%
Thyroid	32,130	3%
Pancreas	28,480	3%
Kidney & renal pelvis	27,300	3%
Leukemia	25,560	3%
All sites	**927,910**	

Estimated Deaths

Male

Site	Deaths	%
Lung & bronchus	69,410	22%
Prostate	34,130	11%
Colon & rectum	28,520	9%
Pancreas	25,270	8%
Liver & intrahepatic bile duct	20,300	6%
Leukemia	13,900	4%
Esophagus	12,410	4%
Urinary bladder	12,260	4%
Non-Hodgkin lymphoma	12,170	4%
Brain & other nervous system	10,500	3%
All sites	**319,420**	

Female

Site	Deaths	%
Lung & bronchus	62,470	22%
Breast	43,600	15%
Colon & rectum	24,460	8%
Pancreas	22,950	8%
Ovary	13,770	5%
Uterine corpus	12,940	4%
Liver & intrahepatic bile duct	9,930	3%
Leukemia	9,760	3%
Non-Hodgkin lymphoma	8,550	3%
Brain & other nervous system	8,100	3%
All sites	**289,150**	

Estimates are rounded to the nearest 10, and cases exclude basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder. Estimates do not include Puerto Rico or other US territories. Ranking is based on modeled projections and may differ from the most recent observed data.

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Does Age Really Matter?

- Why of course it does!
- Age is a major risk factor for sporadic CRC
- Incidence has doubled in patients age 20-49
- Between 2000 and 2016, 15% higher incidence in adults age 40-49
- People born around 1990 have 2x the risk of colon cancer and 4x the risk of rectal cancer compared to those born around 1950
- 10.5% of new CRC cases occur in people under the age 50

Screening Numbers

- In 2016, 25.6% of adults have never been screened for CRC

- 2018, approximately 31% were not update with their screening

Forms of Screening

Colonoscopy

One-step screening that allows for direct visualization

Allows for detection of early stage cancer and detection and removal of polyps

A review of 6 observational studies demonstrated a pooled reduction of 69% incidence and 68% reduction mortality

Sensitivity

- 95% for CRC
- 95% for adenomas > 10 mm
- 85% for adenomas 6-9 mm
- 75% for adenomas 1-5 mm

Risk of complications: 4-8/10,000

- Dehydration or electrolyte imbalances from bowel prep
- Colonic perforation < 1%
- Bleeding 0.1% - 0.6%
- Cardiopulmonary events 08%
- Postpolypectomy syndrome

Stool Based Screening

Options include FOBT, FIT, and mtsDNA test (Cologuard)

FIT has largely replaced FOBT

- At home single stool sample
- High sensitivity for detecting CRC and advanced adenoma compared to FOBT
- Sensitivity 73.8% and Specificity 94% for detection of CRC
- Low sensitivity for advanced adenomas
- No dietary restrictions

Multitarget stool DNA = FIT + DNA testing

- KRAS, methylated BMP3, methylated NDRG4
- Better sensitivity for advanced adenoma and large serrated lesions than FIT
- Repeat interval 1-3 years, Medicare reimburses every 3
- $$$
- High sensitivity for detection but lower specificity for detection of CRC or advanced lesions

Flexible Sigmoidoscopy

Direct visualization of left sided colon

If adenomas found → next step colonoscopy

90-100% sensitivity for distal colon CRC

Reduce in CRC

- Incidence: 21%
- Mortality: 26%

Requires enema prep

Needs to be repeated every 5-10 years

Alternative imaging test

CT colonography (CTC)

- Diagnostic accuracy 68-98% for lesions > 10 mm
- Poor diagnostic tool for serrated lesions
- Recommended every 5 years
- Requires bowel prep

Colon capsule

- FDA approved for patients with incomplete colonoscopy or in patients with Lower GI bleed that are too high risk to undergo colonoscopy
- For polyps > 6 mm
  - Sensitivity 81%
  - Specificity 93%
  - Still requires bowel prep
  - Repeat interval ?

Blood-Based Test Septin 9

FDA approved for CRC screening

Sensitivity 48 % for CRC detection

Sensitivity 11% for adenoma detection

Not considered an optimal screening tool at this time

When Do We Start And Stop Screening?

Age To Start Screening

Modeling data suggests initiating screening at age 45 years instead of age 50 years would result in approximately 25 more life-years gained per 1,000 individuals screened.

Recent studies have highlighted a rising incidence of CRC in individuals younger than 50 years in the United States. The incidence rates have doubled in 20- to 49- year-olds

Over time, detection and removal of polyps in individuals 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.

Evidence For Younger Screening

- A modeling study using three independently produced microsimulation models

- All three looked at screening with FIT, msDNA, flex sig w/ or w/o stool testing, CT colonography, or colonoscopy

- Ages starting at 45, 50, or 55 and screening until 75, 80, 85

- Full adherence for all strategies were assumed

- Models found that colonoscopy every 10 years, annual FIT, sig every 10 with annual FIT, and CTC every 5 years had comparable benefit in life years gained.

- Screening starting at age 45 was more effective and provided a more favorable balance between life years gained and screening burden as compared to ages 50

Evidence For Younger Screening

A recent Markov analysis evaluated the population-level impact of lowering the screening age to 45 years and found that although it may be cost-effective to begin younger, elevating the screening rate in persons 50–75 to the target of 80% would prevent 3 times as many deaths attributed to CRC for approximately 66% less cost per quality life years gained

Potential Pitfalls

- Assumed perfect adherence

- Benefits measured on life years gained and did not account for quality of life

- Analysis built to inform population based guidelines, not on an individual level

Age To Stop Screening

- At age greater than 75, the decision should be individualized.

  - Benefits of polypectomy are delayed 7-10 years, and with competing causes of death, it may not be work the risks of colonoscopy or the eventual treatment of colon cancer.

- If patient is willing and able to have CRC treated, and they are thought to have life expectancy of 10-12 years or more, it is likely worth the scope/continued screening

U.S. Preventive Services TASK FORCE

Population	Recommendation	Grade
Adults aged 50 to 75 years	The USPSTF recommends screening for colorectal cancer in all adults aged 50 to 75 years. See the "Practice Considerations" section and Table 1 for details about screening strategies.	A
Adults aged 45 to 49 years	The USPSTF recommends screening for colorectal cancer in adults aged 45 to 49 years. See the "Practice Considerations" section and Table 1 for details about screening strategies.	B
Adults aged 76 to 85 years	The USPSTF recommends that clinicians selectively offer screening for colorectal cancer in adults aged 76 to 85 years. Evidence indicates that the net benefit of screening all persons in this age group is small. In determining whether this service is appropriate in individual cases, patients and clinicians should consider the patient's overall health, prior screening history, and preferences.	C

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- We recommend CRC screening in average risk individuals between ages 50-75 years

- We suggest RC screening in average risk individuals between ages 45-49 years

- Screening in ages 86 and above is not recommended because of competing causes of mortality

- We recommend colonoscopy and FIT as the primary screening modalities for screening

- Start screening at age 45 and screen until 75 years old.

- Recommend screening with colonoscopy or FIT

- The decision to screen after the age of 75 should be individualized

- Should not continue past age 85

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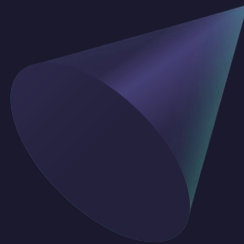
- Clinicians should screen for colorectal cancer from ages 50-75

- Clinicians should select the colorectal cancer screening test with the patient based on individual benefits, harms, costs, availability, frequency and patient preference.

- Discontinue at age 75 or when life expectancy is 10 years or less

Updated 2021

- Start screening for ages 50-75 years

- Individualized risk from age 76-85 years

- Individualize method with stool vs direct visualization

Role of Aspirin

- Systematic reviews of cardiovascular disease trials have shown that those people who take aspirin daily for >10 years had a 40% reduced risk of colorectal cancer.

- Current USPSTF recommends daily low dose aspirin for adults aged 50-59 who have a 10% or greater 10 year ASCVD risk score, have a life expectancy of at least 10 years, and are willing to take low dose aspirin daily for 10 years.

- In this age group, you have an additional benefit of reducing risk of colorectal cancer

How Can We Apply This To Our Patients?

Age To Start

- Shared decision making is important

- Patients eager to screen or for those who are hesitant

- Trying to have consistent conversations with patients to avoid clinical bias

Which Method Do We Use?

- Good data to say either colonoscopy vs FIT

- Colonoscopy has best hazard ratio for incidence and mortality (0.50 and 0.32)

- Colonoscopy removes precancerous lesions (adenoma-carcinoma sequence)

- FIT relative risk 0.90 for CRC mortality

- Better adherence with FIT?

- More incentive to add aspirin?

References