Lowering the Colorectal Cancer Screening Age: Evidence and Implementation Challenges

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Disclosures

- National Cancer Institute (Lead PI: R37CA276306; UG1CA287011)
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- Janssen – research support (PI)
- Genentech – research support (PI)
- Polymedco – research support (PI)

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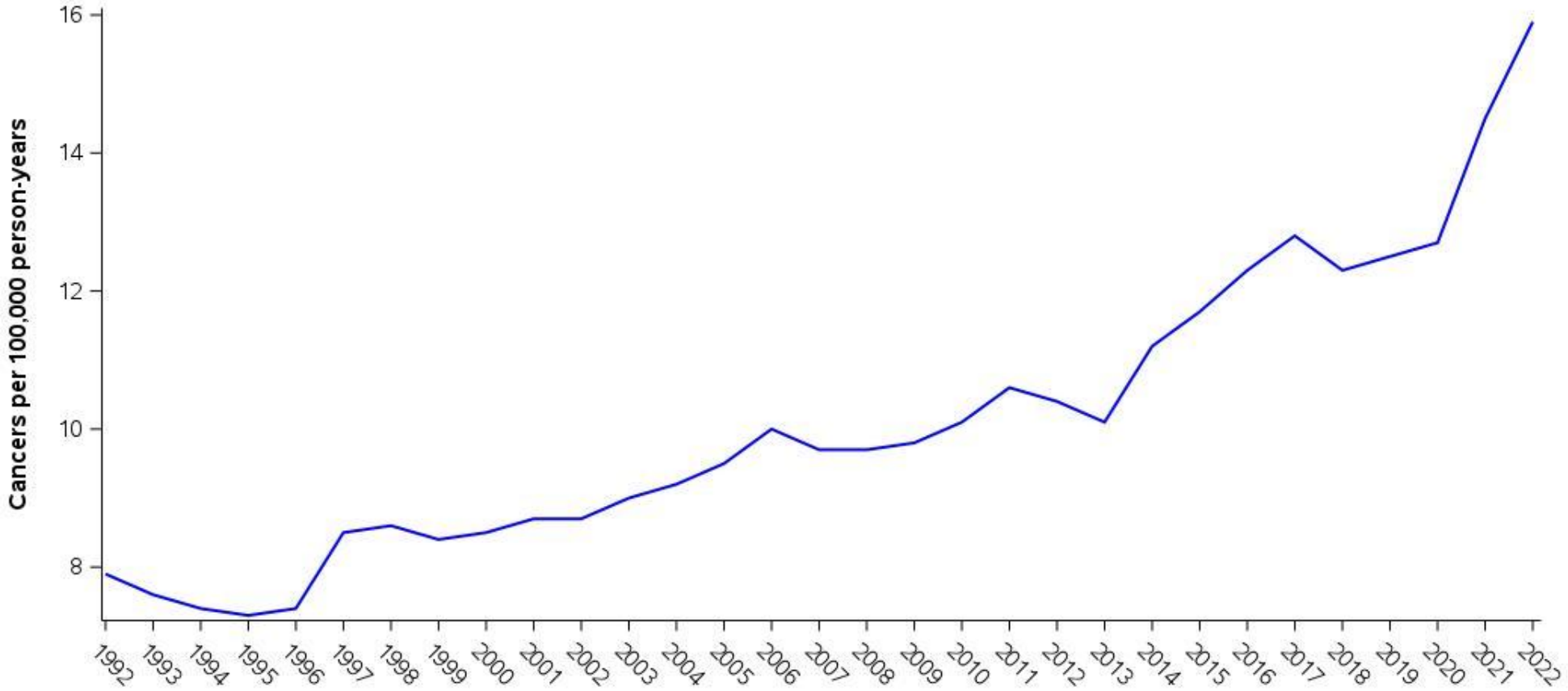
Increasing Rates of Early-onset CRC since the 1990s



Slide courtesy of Dr. Caitlin Murphy, SEER 12 incidence, 1992-2022, Age 18-49

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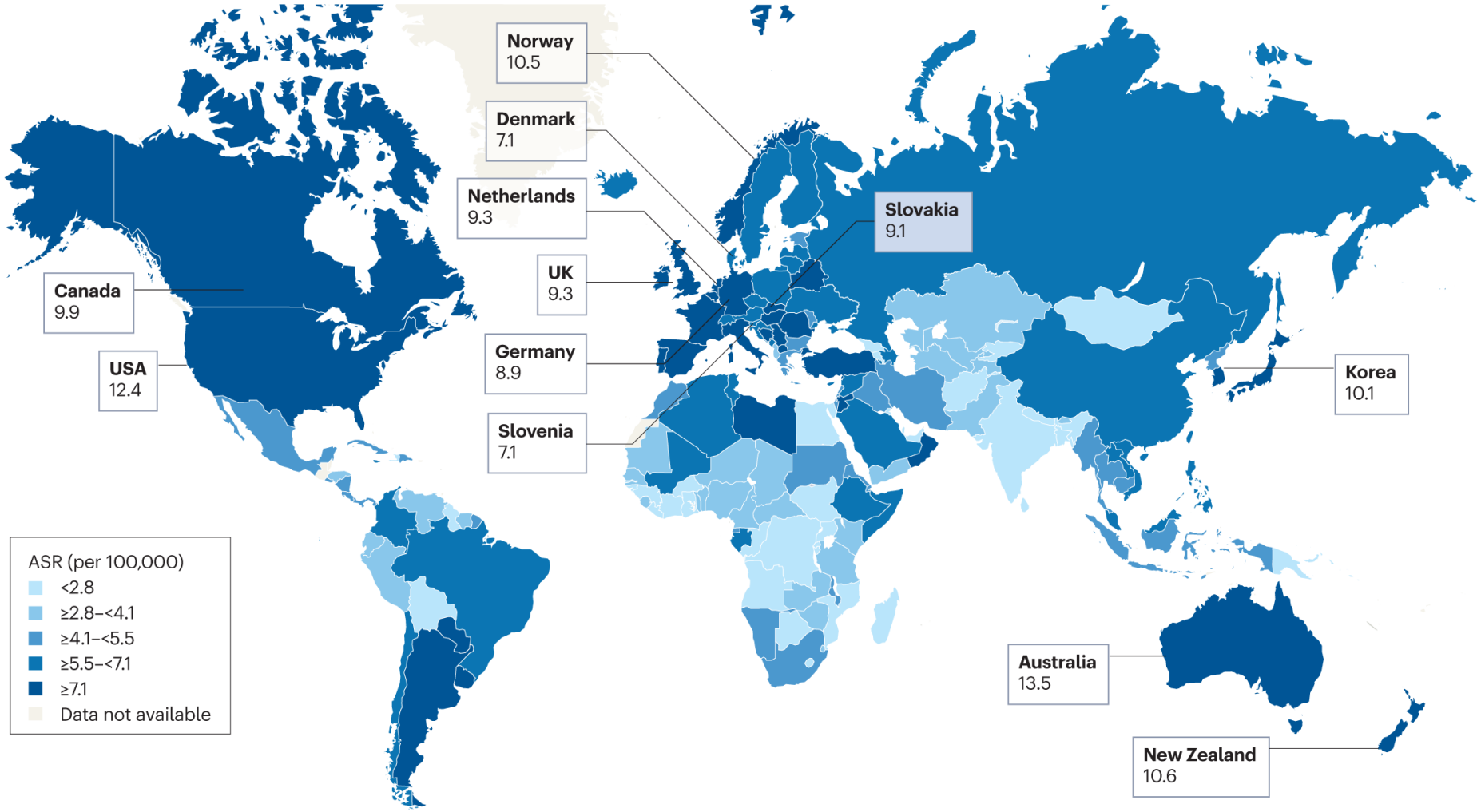
Early-onset CRC is Also Increasing Globally



Spaander MCW et al. Nature Rev Dis Primers 2023

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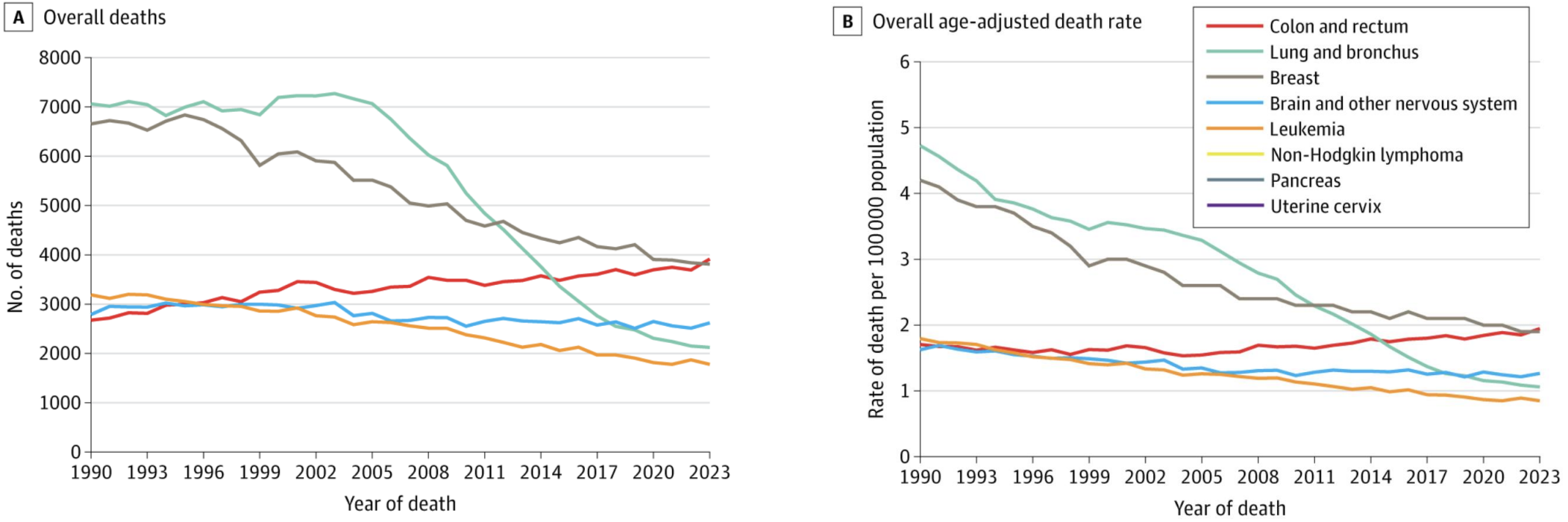
CRC is the Leading Cause of Cancer Death in Young Adults



Siegel RL et al. JAMA 2026

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CRC Screening Guideline Updates 2021

Clinical Review & Education

JAMA | US Preventive Services Task Force | RECOMMENDATION STATEMENT

Screening for Colorectal Cancer
US Preventive Services Task Force Recommendation Statement

US Preventive Services Task Force

IMPORTANCE Colorectal cancer is the third leading cause of cancer death for both men and women, with an estimated 52 980 persons in the US projected to die of colorectal cancer in 2021. Colorectal cancer is most frequently diagnosed among persons aged 65 to 74 years. It is estimated that 10.5% of new colorectal cancer cases occur in persons younger than 50 years. Incidence of colorectal cancer (specifically adenocarcinoma) in adults aged 40 to 49 years has increased by almost 15% from 2000-2002 to 2014-2016. In 2016, 26% of eligible adults in the US had never been screened for colorectal cancer and in 2018, 31% were not up to date with screening.

OBJECTIVE To update its 2016 recommendation, the US Preventive Services Task Force (USPSTF) commissioned a systematic review to evaluate the benefits and harms of screening for colorectal cancer in adults 40 years or older. The review also examined whether these findings varied by age, sex, or race/ethnicity. In addition, as in 2016, the USPSTF commissioned a report from the Cancer Intervention and Surveillance Modeling Network Colorectal Cancer Working Group to provide information from comparative modeling on how estimated life-years gained, colorectal cancer cases averted, and colorectal cancer deaths averted vary by different starting and stopping ages for various screening strategies.

POPULATION Asymptomatic adults 45 years or older at average risk of colorectal cancer (ie, no prior diagnosis of colorectal cancer, adenomatous polyps, or inflammatory bowel disease; no personal diagnosis or family history of known genetic disorders that predispose them to a high lifetime risk of colorectal cancer [such as Lynch syndrome or familial adenomatous polyposis]).

EVIDENCE ASSESSMENT The USPSTF concludes with high certainty that screening for colorectal cancer in adults aged 50 to 75 years has substantial net benefit. The USPSTF concludes with moderate certainty that screening for colorectal cancer in adults aged 45 to 49 years has moderate net benefit. The USPSTF concludes with moderate certainty that screening for colorectal cancer in adults aged 76 to 85 years who have been previously screened has small net benefit. Adults who have never been screened for colorectal cancer are more likely to benefit.

RECOMMENDATION The USPSTF recommends screening for colorectal cancer in all adults aged 50 to 75 years. (A recommendation) The USPSTF recommends screening for colorectal cancer in adults aged 45 to 49 years. (B recommendation) 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 recommendation)

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Author/Group Information: The US Preventive Services Task Force (USPSTF) members are listed at the end of this article.

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JAMA. 2021;325(19):1965-1977. doi:10.1001/jama.2021.6238
Corrected on August 24, 2021.

CME

ACG Clinical Guidelines: Colorectal Cancer Screening 2021

Aasma Shaukat, MD, MPH, FACG[1,2], Charles J. Kahi, MD, MSc, FACG[3-7], Carol A. Burke, MD, FACG[4], Linda Rabeneck, MD, MPH, MACG[5], Bryan G. Sauer, MD, MSc, FACG (GRADE Methodologist)[6] and Douglas K. Rex, MD, MACG[3]

Colorectal cancer (CRC) is the third most common cancer in men and women in the United States. CRC screening efforts are directed toward removal of adenomas and sessile serrated lesions and detection of early-stage CRC. The purpose of this article is to update the 2009 American College of Gastroenterology CRC screening guidelines. The guideline is framed around several key questions. We conducted a comprehensive literature search to include studies through October 2020. The inclusion criteria were studies of any design with men and women age 40 years and older. Detailed recommendations for CRC screening in average-risk individuals and those with a family history of CRC are discussed. We also provide recommendations on the role of aspirin for chemoprevention, quality indicators for colonoscopy, approaches to organized CRC screening and improving adherence to CRC screening. CRC screening must be optimized to allow effective and sustained reduction of CRC incidence and mortality. This can be accomplished by achieving high rates of adherence, quality monitoring and improvement, following evidence-based guidelines, and removing barriers through the spectrum of care from noninvasive screening tests to screening and diagnostic colonoscopy. The development of cost-effective, highly accurate, noninvasive modalities associated with improved overall adherence to the screening process is also a desirable goal.

SUPPLEMENTARY MATERIAL accompanies this paper at http://links.lww.com/AJG/B890 and http://links.lww.com/AJG/B891

Am J Gastroenterol 2021;116:458–479. https://doi.org/10.14309/ajg.0000000000001122

INTRODUCTION

In the United States, colorectal cancer (CRC) ranks second to lung cancer as a cause of cancer mortality and is the third most commonly occurring cancer in both men and women. A study estimated that in 2020 approximately 147,950 new CRC cases would have been diagnosed and 53,200 individuals would have died of the disease (1). Between 2011 and 2015, the average annual incidence rates per 100,000 population were 45.9 and 34.6 for men and women respectively (2). CRC incidence and mortality rates have shown a steady decline of approximately 1.7% and 3.2%, respectively per year. The decline began in the mid 1980s and has accelerated since the early 2000s. It is believed to be driven by changes in risk factors, early detection of cancer through CRC screening, and removal of precancerous polyps with colonoscopy, in addition to advances in surgical and treatment approaches.

Most CRCs develop through the adenoma-carcinoma sequence, presenting opportunities to prevent cancer by removing its precursor lesions, in addition to identifying CRC in its earliest, curable stages (3). Approximately 70% of sporadic CRCs develop from adenomatous polyps and 25%–30% arise from sessile serrated lesions (SSLs) through the SSL-to-carcinoma pathway (4). CRC screening efforts are directed toward removal of adenomas, SSLs and detection of early-stage CRC. Certain screening modalities such as colonoscopy, sigmoidoscopy, CT colonography and to a lesser extent stool-based testing, will detect advanced adenomatous polyps, whereas colonoscopy is optimal for the detection of SSLs. Endoscopic removal of polyps reduces CRC incidence and CRC mortality (5,6). Given new evidence regarding enhancing screening adherence, newer methods for CRC screening, and evidence to support the efficacy of screening, the purpose of this article is to update the 2009 American College of Gastroenterology (ACG) CRC screening guideline (7).

METHODS

The guideline is framed around several key questions which are outlined below. The key questions were developed by the authors and vetted through the ACG leadership. We placed emphasis on having practical recommendations that would be helpful for practicing providers in the United States. We conducted a focused literature search and used existing guidelines and technical reviews on CRC screening by key organizations. We used a modified Grading of Recommendations, Assessment, Development and Evaluation methodology (8) to evaluate the quality of the evidence and strength of recommendation. We used "we recommend" for strong recommendations and "we suggest" for conditional recommendations. Two Grading of Recommendations, Assessment, Development

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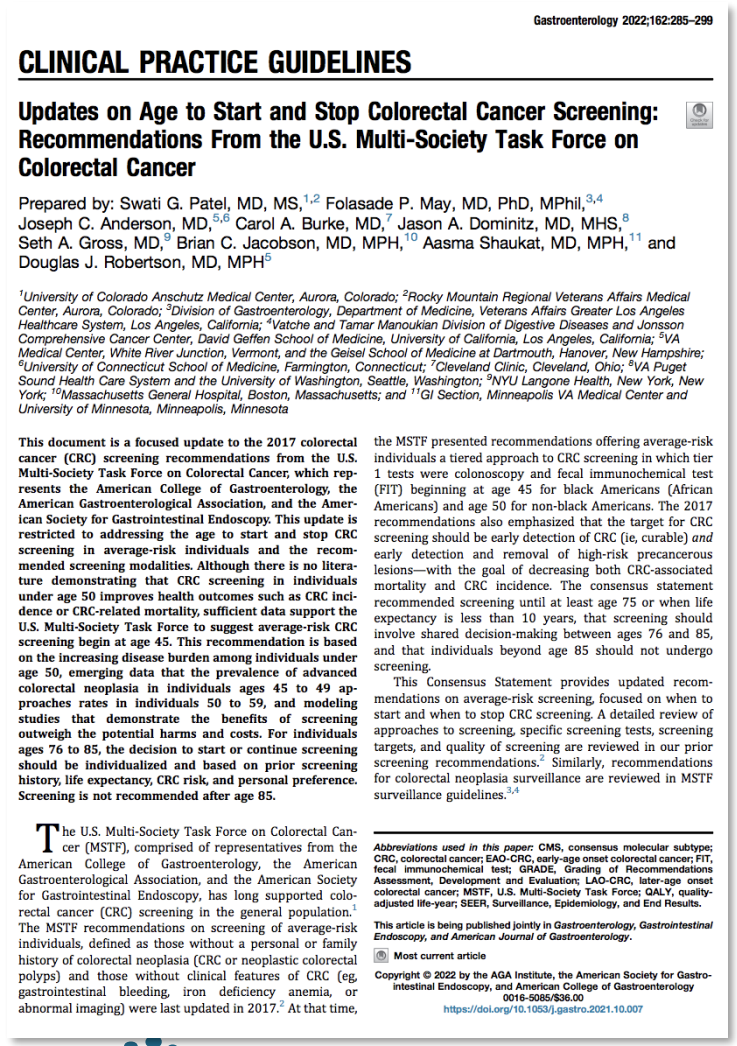

CLINICAL PRACTICE GUIDELINES

Updates on Age to Start and Stop Colorectal Cancer Screening: Recommendations From the U.S. Multi-Society Task Force on Colorectal Cancer

Prepared by: Swati G. Patel, MD, MS,[1,2] Folasade P. May, MD, PhD, MPhil,[3,4] Joseph C. Anderson, MD,[5,6] Carol A. Burke, MD,[7] Jason A. Dominitz, MD, MHS,[8] Seth A. Gross, MD,[9] Brian C. Jacobson, MD, MPH,[10] Aasma Shaukat, MD, MPH,[11] and Douglas J. Robertson, MD, MPH[5]

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This document is a focused update to the 2017 colorectal cancer (CRC) screening recommendations from the U.S. Multi-Society Task Force on Colorectal Cancer, which represents the American College of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy. This update is restricted to addressing the age to start and stop CRC screening in average-risk individuals and the recommended screening modalities. Although there is no literature demonstrating that CRC screening in individuals under age 50 improves health outcomes such as CRC incidence or CRC-related mortality, sufficient data support the U.S. Multi-Society Task Force to suggest average-risk CRC screening begin at age 45. This recommendation is based on the increasing disease burden among individuals under age 50, emerging data that the prevalence of advanced colorectal neoplasia in individuals ages 45 to 49 approaches rates in individuals 50 to 59, and modeling studies that demonstrate the benefits of screening outweigh the potential harms and costs. For individuals ages 76 to 85, the decision to start or continue screening should be individualized and based on prior screening history, life expectancy, CRC risk, and personal preference. Screening is not recommended after age 85.

The U.S. Multi-Society Task Force on Colorectal Cancer (MSTF), comprised of representatives from the American College of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy, has long supported colorectal cancer (CRC) screening in the general population.[1] The MSTF recommendations on screening of average-risk individuals, defined as those without a personal or family history of colorectal neoplasia (CRC or neoplastic colorectal polyps) and those without clinical features of CRC (eg, gastrointestinal bleeding, iron deficiency anemia, or abnormal imaging) were last updated in 2017.[2] At that time, the MSTF presented recommendations offering average-risk individuals a tiered approach to CRC screening in which tier 1 tests were colonoscopy and fecal immunochemical test (FIT) beginning at age 45 for black Americans (African Americans) and age 50 for non-black Americans. The 2017 recommendations also emphasized that the target for CRC screening should be early detection of CRC (ie, curable) *and* early detection and removal of high-risk precancerous lesions—with the goal of decreasing both CRC-associated mortality and CRC incidence. The consensus statement recommended screening until at least age 75 or when life expectancy is less than 10 years, that screening should involve shared decision-making between ages 76 and 85, and that individuals beyond age 85 should not undergo screening.

This Consensus Statement provides updated recommendations on average-risk screening, focused on when to start and when to stop CRC screening. A detailed review of approaches to screening, specific screening tests, screening targets, and quality of screening are reviewed in our prior screening recommendations.[2] Similarly, recommendations for colorectal neoplasia surveillance are reviewed in MSTF surveillance guidelines.[3,4]

Abbreviations used in this paper: **CMS, consensus molecular subtype; CRC, colorectal cancer; EAO-CRC, early-age onset colorectal cancer; FIT, fecal immunochemical test; GRADE, Grading of Recommendations Assessment, Development and Evaluation; LAO-CRC, later-age onset colorectal cancer; MSTF, U.S. Multi-Society Task Force; QALY, quality-adjusted life-year; SEER, Surveillance, Epidemiology, and End Results.**

This article is being published jointly in *Gastroenterology, Gastrointestinal Endoscopy, and American Journal of Gastroenterology*.

Most current article

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Davidson KW USPSTF JAMA 2021; Shaukat A et al. Am J Gastroneterol 2021; Patel SG et al. Gastroenterology 2022

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What is the benefit of screening starting at age 45?

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Benefit #1: Screening Reduces CRC Risk in Young Adults

Author	Study Design	Size	Study Population	Test	CRC Incidence HR (95% CI)	CRC Mortality HR (95% CI)
Seghal (US)	Cohort (Florida data)	195,600	45-49 yrs	Colonoscopy	0.50 (0.44-0.56)	n/a
Ma (US)	Cohort NHS	111,801	<50 yrs	Colonoscopy sigmoidoscopy	0.43 (0.29-0.62)	n/a
Chiu (Taiwan)	Cohort	263,125	40-49 years vs 50 yrs	Biennial FIT	0.79 (0.67-0.94)	0.61 (0.38-0.98)

Seghal M et al Gastro 2021; Ma W et al JAMA Oncology 2022; Chiu HM et al JAMA Oncology 2025

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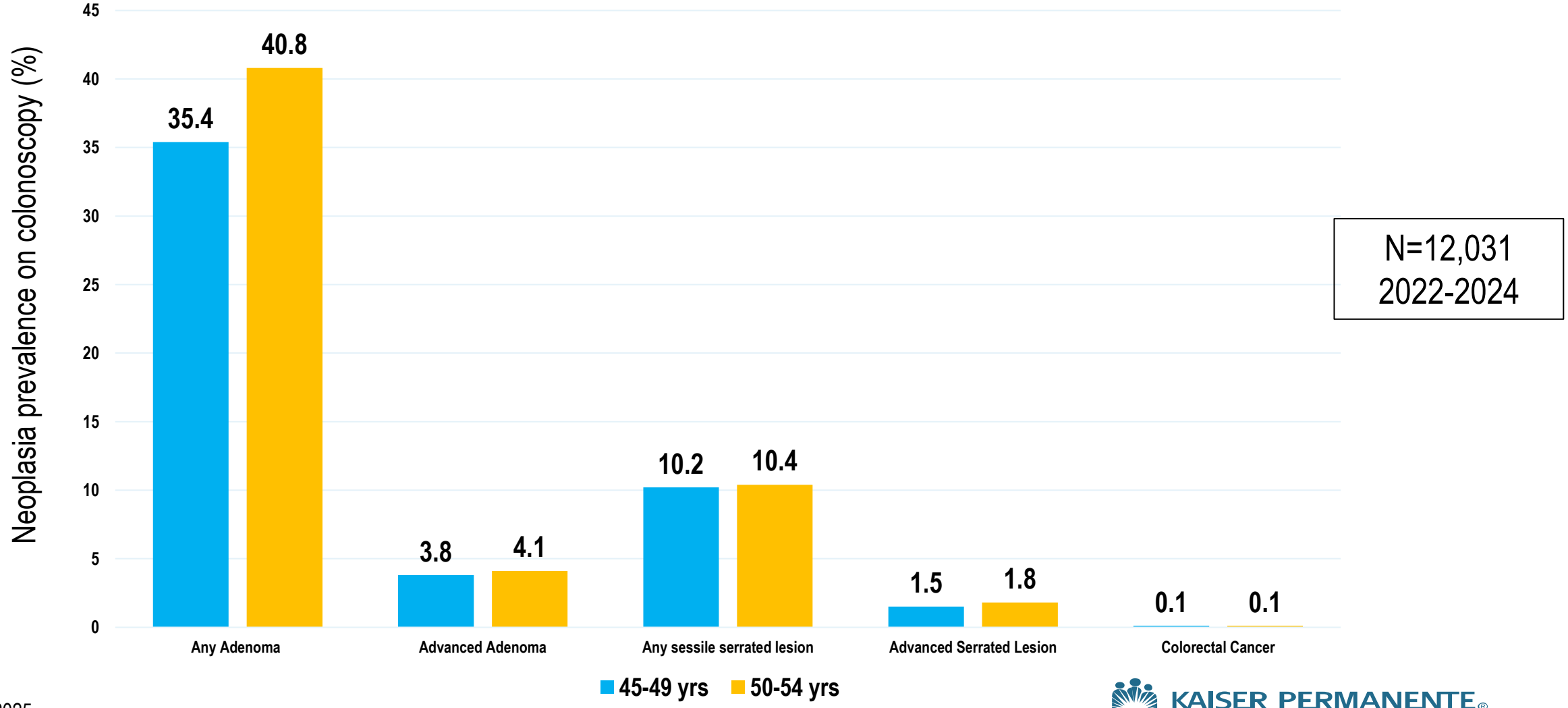
Benefit #2: Similar Adenoma Prevalence in Young Adults

Study, year	Years	Population	Adenoma prevalence 45-49 yrs	Adenoma prevalence 50-54 yrs	Database
Kolb, 2021	2002-2020	51,811	17.8%	24.8% (50-59)	SRMA
Liang, 2022	2010-2020	92,752	28.0%	33.0%	GIQuIC
Bilal, 2022	2014-2020	47,213	28.6%	31.8%	GIQuIC
Trivedi, 2022	2014-2021	79,934	32%	37.7%	GIQuIC
Shaukat, 2022	2015-2019	4,841	28.4%	31.1%	Minnesota GI
Ladabaum, 2022	2019-2021	350	34.3%	38.2%	Stanford
Lee, 2025	2022-2024	12,031	35.4%	40.8%	Kaiser

Benefit #3: Similar Advanced Adenoma Prevalence in Young Adults



N=12,031
2022-2024

Lee JK JAMA 2025

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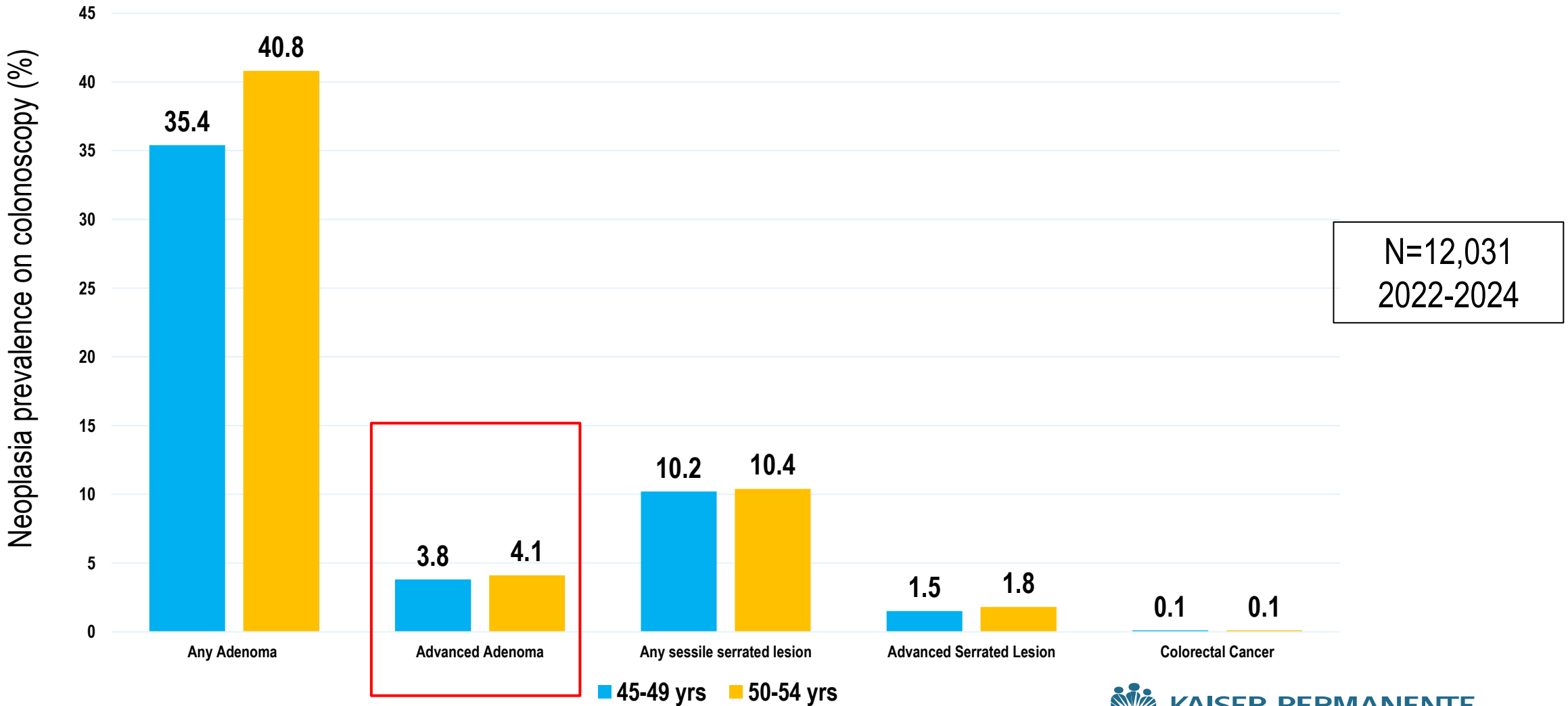
Benefit #3: Similar Advanced Adenoma Prevalence in Young Adults



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Lee JK JAMA 2025

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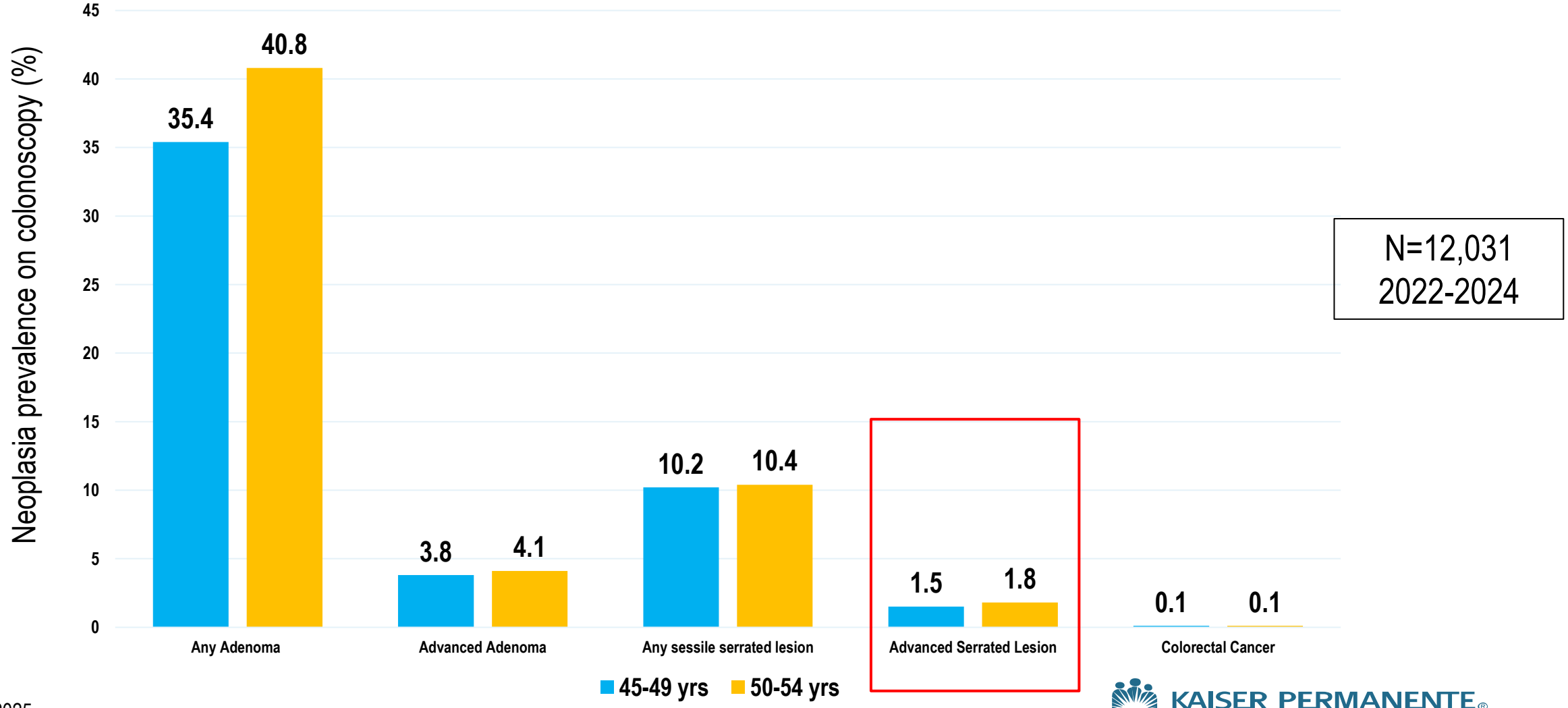

Lee JK JAMA 2025

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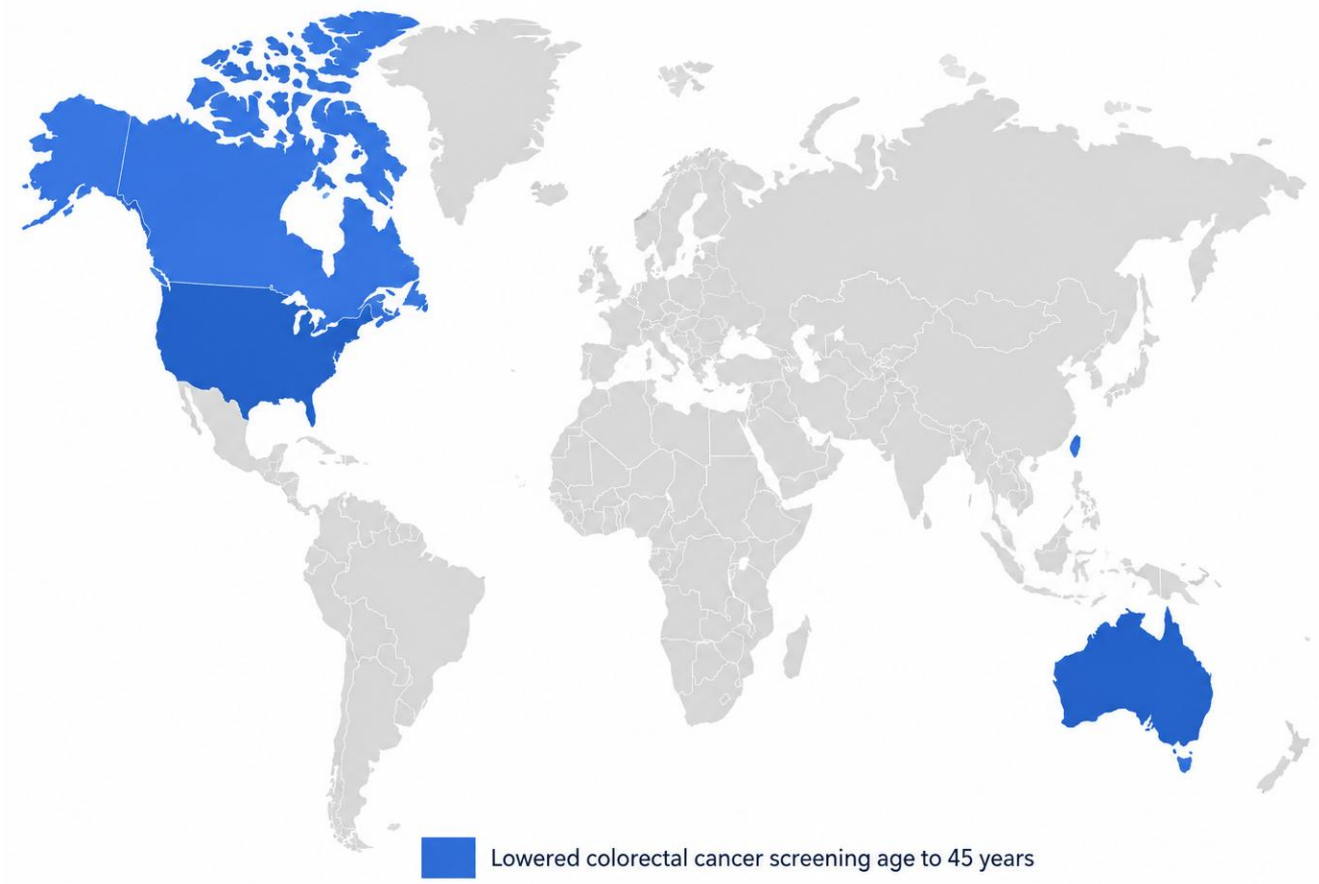
What Countries Have Lowered the CRC Screening Age to 45?

Few Countries Have Lowered the CRC Screening Age to 45



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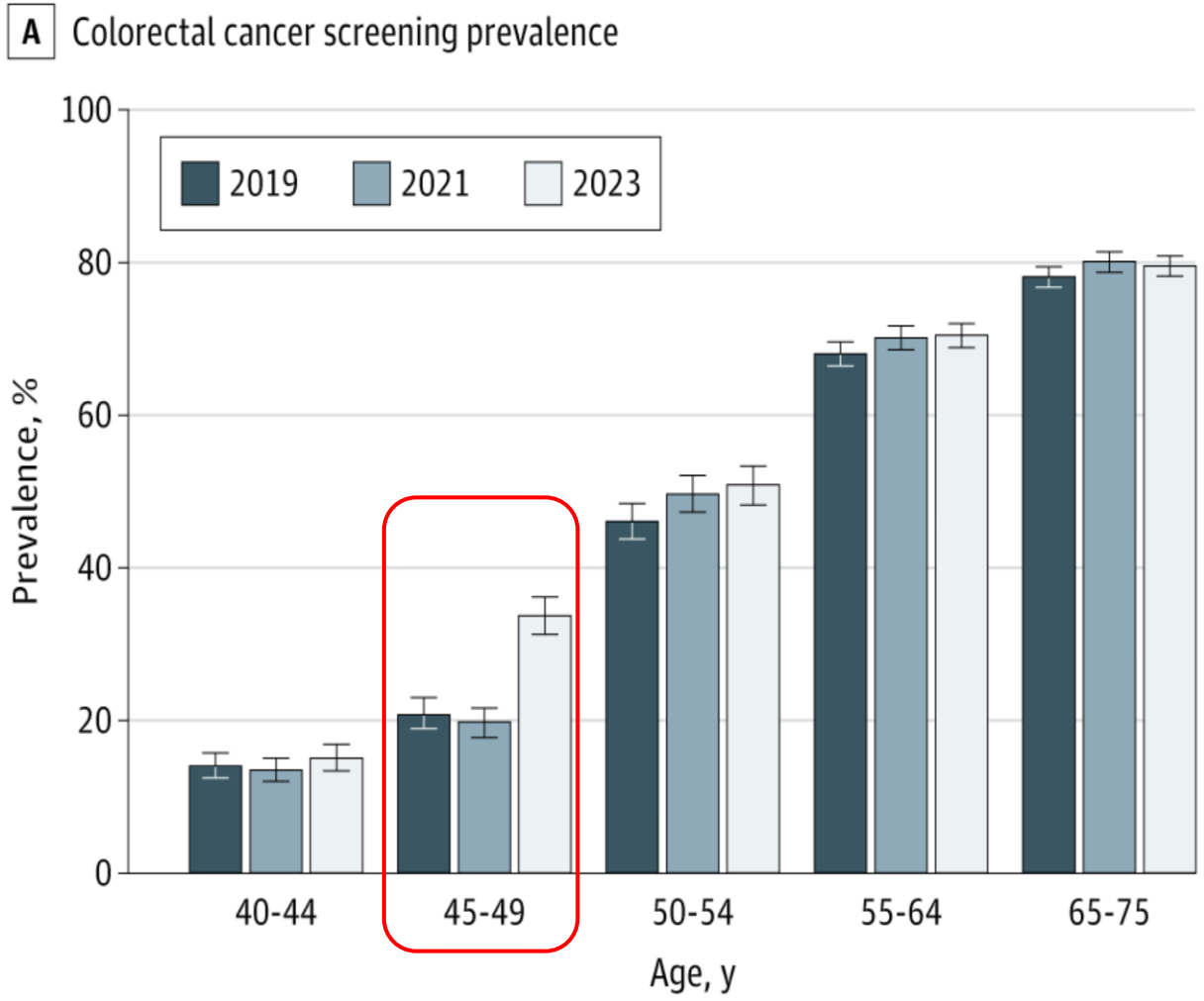
What is the CRC Screening Rates among Young Adults?

CRC Screening Rates Remain Suboptimal



	2019	2021	2023
Up-to-date	20.8	19.7	33.7
Colonoscopy	19.9	17.8	27.7
Stool test	1.3	2.7	7.1

Star J et al. JAMA 2025 (National Health Interview Survey)

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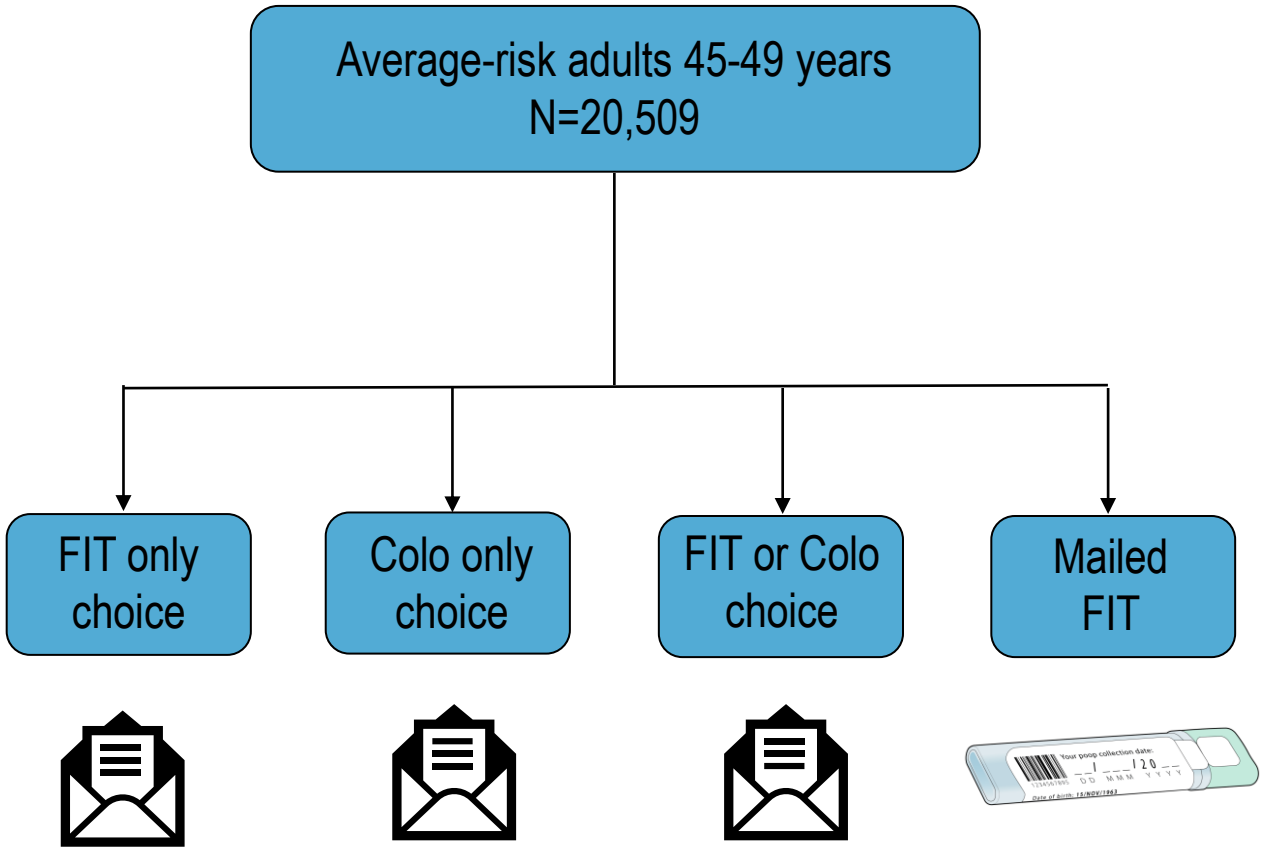
What is the Most Effective Strategy To Increase CRC Screening in Young Adults?

Mailed FIT Outreach is the Best Strategy



Galoosian A et al. JAMA 2025

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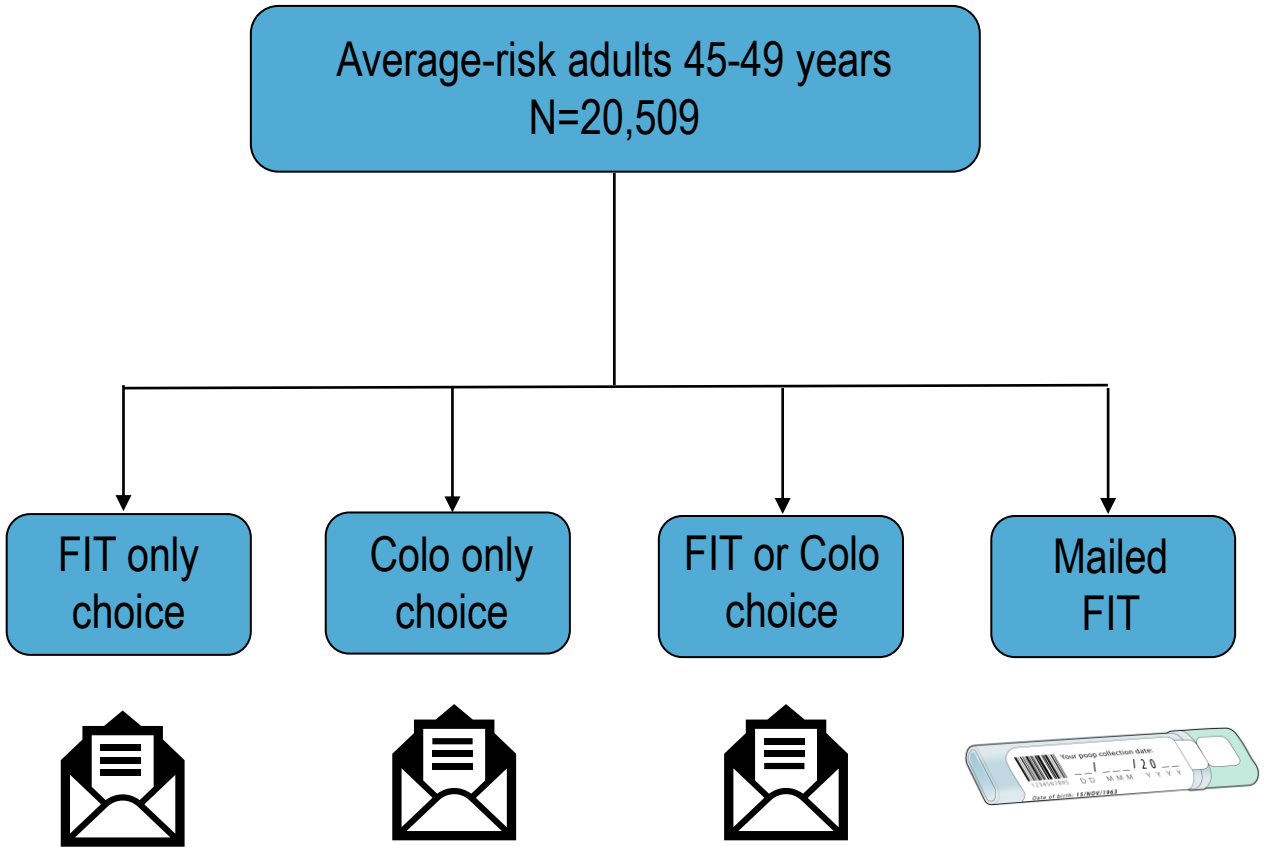
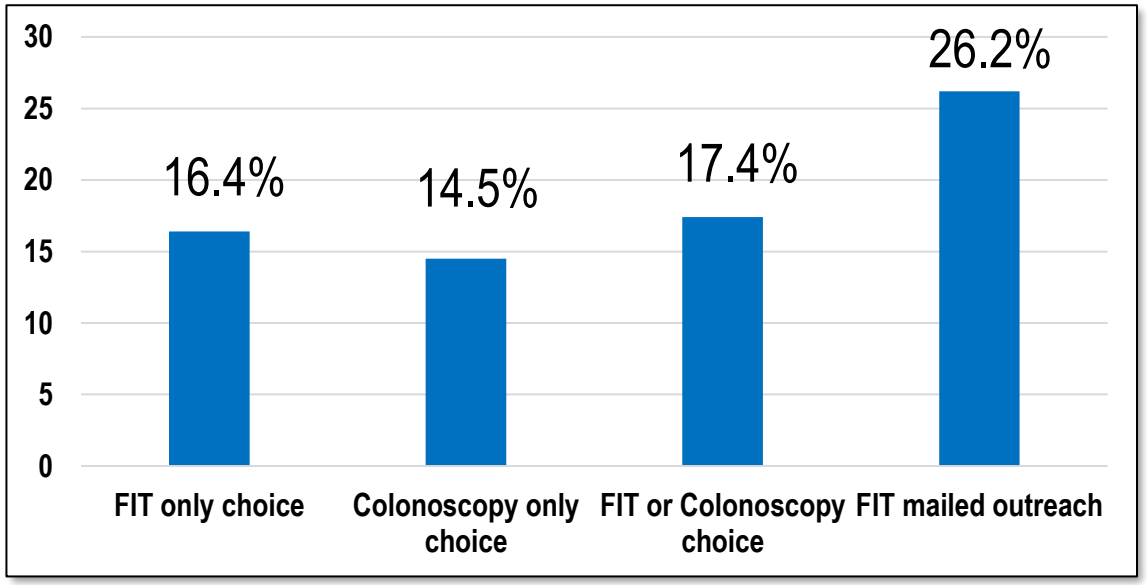
Mailed FIT Outreach is the Best Strategy





- Screening completion rate was significantly higher with mailed FIT outreach (P<0.001)
- Dual-modality group had higher screening rate than groups offered single modality (P=0.004)

Galoosian A et al. JAMA 2025

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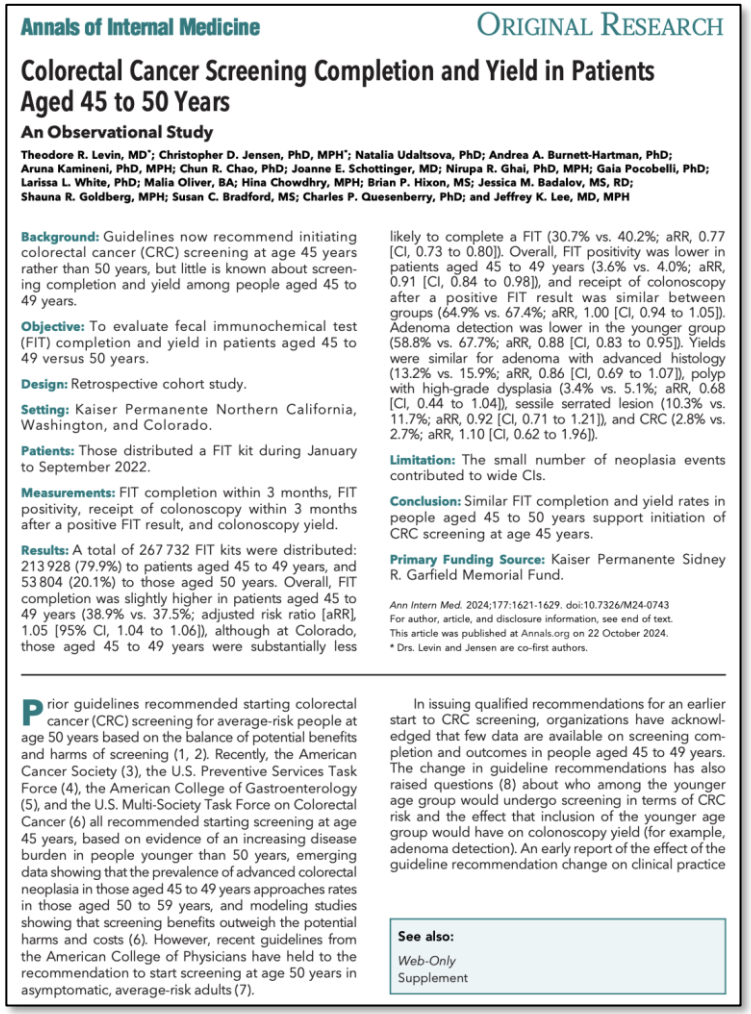
Mailed FIT Outreach for CRC Screening in 45-49-year-olds



Annals of Internal Medicine

ORIGINAL RESEARCH

Colorectal Cancer Screening Completion and Yield in Patients Aged 45 to 50 Years

An Observational Study

Theodore R. Levin, MD*; Christopher D. Jensen, PhD, MPH*; Natalia Udaltsova, PhD; Andrea A. Burnett-Hartman, PhD; Aruna Kamineni, PhD, MPH; Chun R. Chao, PhD; Joanne E. Schottinger, MD; Nirupa R. Ghai, PhD, MPH; Gaia Pocobelli, PhD; Larissa L. White, PhD; Malia Oliver, BA; Hina Chowdhry, MPH; Brian P. Hixon, MS; Jessica M. Badalov, MS, RD; Shauna R. Goldberg, MPH; Susan C. Bradford, MS; Charles P. Quesenberry, PhD; and Jeffrey K. Lee, MD, MPH

Background: Guidelines now recommend initiating colorectal cancer (CRC) screening at age 45 years rather than 50 years, but little is known about screening completion and yield among people aged 45 to 49 years.

Objective: To evaluate fecal immunochemical test (FIT) completion and yield in patients aged 45 to 49 versus 50 years.

Design: Retrospective cohort study.

Setting: Kaiser Permanente Northern California, Washington, and Colorado.

Patients: Those distributed a FIT kit during January to September 2022.

Measurements: FIT completion within 3 months, FIT positivity, receipt of colonoscopy within 3 months after a positive FIT result, and colonoscopy yield.

Results: A total of 267 732 FIT kits were distributed: 213 928 (79.9%) to patients aged 45 to 49 years, and 53 804 (20.1%) to those aged 50 years. Overall, FIT completion was slightly higher in patients aged 45 to 49 years (38.9% vs. 37.5%; adjusted risk ratio [aRR], 1.05 [95% CI, 1.04 to 1.06]), although at Colorado, those aged 45 to 49 years were substantially less likely to complete a FIT (30.7% vs. 40.2%; aRR, 0.77 [CI, 0.73 to 0.80]). Overall, FIT positivity was lower in patients aged 45 to 49 years (3.6% vs. 4.0%; aRR, 0.91 [CI, 0.84 to 0.98]), and receipt of colonoscopy after a positive FIT result was similar between groups (64.9% vs. 67.4%; aRR, 1.00 [CI, 0.94 to 1.05]). Adenoma detection was lower in the younger group (58.8% vs. 67.7%; aRR, 0.88 [CI, 0.83 to 0.95]). Yields were similar for adenoma with advanced histology (13.2% vs. 15.9%; aRR, 0.86 [CI, 0.69 to 1.07]), polyp with high-grade dysplasia (3.4% vs. 5.1%; aRR, 0.68 [CI, 0.44 to 1.04]), sessile serrated lesion (10.3% vs. 11.7%; aRR, 0.92 [CI, 0.71 to 1.21]), and CRC (2.8% vs. 2.7%; aRR, 1.10 [CI, 0.62 to 1.96]).

Limitation: The small number of neoplasia events contributed to wide CIs.

Conclusion: Similar FIT completion and yield rates in people aged 45 to 50 years support initiation of CRC screening at age 45 years.

Primary Funding Source: Kaiser Permanente Sidney R. Garfield Memorial Fund.

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For author, article, and disclosure information, see end of text.
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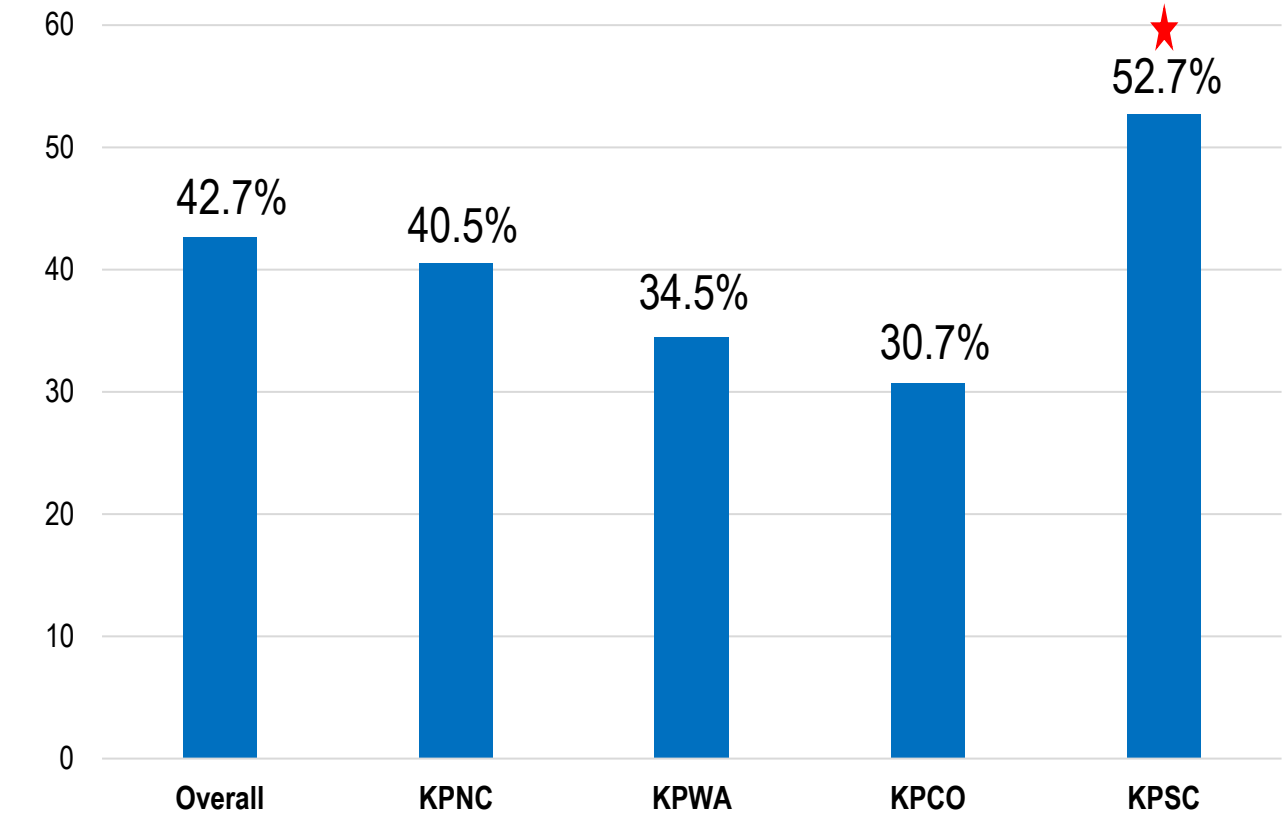
* Drs. Levin and Jensen are co-first authors.

Prior guidelines recommended starting colorectal cancer (CRC) screening for average-risk people at age 50 years based on the balance of potential benefits and harms of screening (1, 2). Recently, the American Cancer Society (3), the U.S. Preventive Services Task Force (4), the American College of Gastroenterology (5), and the U.S. Multi-Society Task Force on Colorectal Cancer (6) all recommended starting screening at age 45 years, based on evidence of an increasing disease burden in people younger than 50 years, emerging data showing that the prevalence of advanced colorectal neoplasia in those aged 45 to 49 years approaches rates in those aged 50 to 59 years, and modeling studies showing that screening benefits outweigh the potential harms and costs (6). However, recent guidelines from the American College of Physicians have held to the recommendation to start screening at age 50 years in asymptomatic, average-risk adults (7).

In issuing qualified recommendations for an earlier start to CRC screening, organizations have acknowledged that few data are available on screening completion and outcomes in people aged 45 to 49 years. The change in guideline recommendations has also raised questions (8) about who among the younger age group would undergo screening in terms of CRC risk and the effect that inclusion of the younger age group would have on colonoscopy yield (for example, adenoma detection). An early report of the effect of the guideline recommendation change on clinical practice

See also:
Web-Only
Supplement



381,387 patients (2022)
4 Health Systems

★ Opt-in approach

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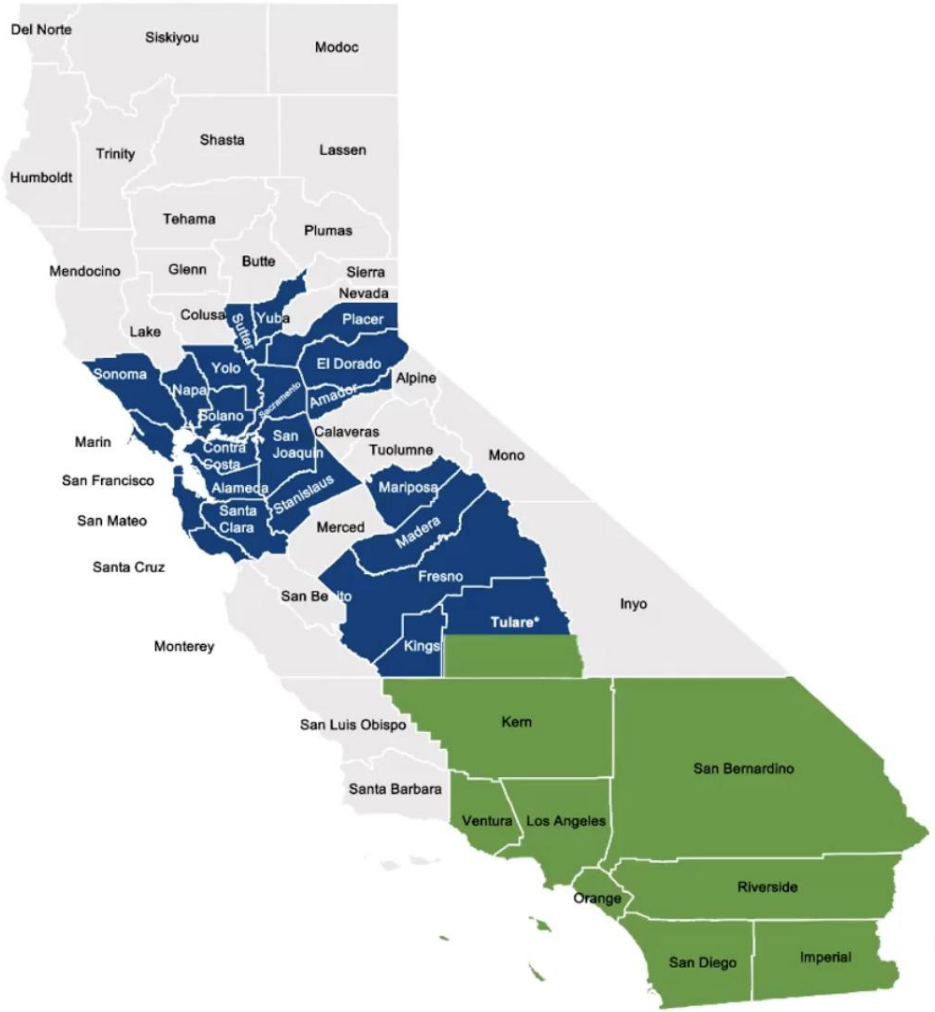
Levin TR, Lee JK et al. Annals of Internal Medicine 2024

Can we scale and implement evidence-based interventions to screen all newly eligible adults?

Kaiser Permanente Northern California



- 4.6 million members across Northern and Central California
- >200,000 adults 45-49 years of age became newly eligible for CRC screening in 2022

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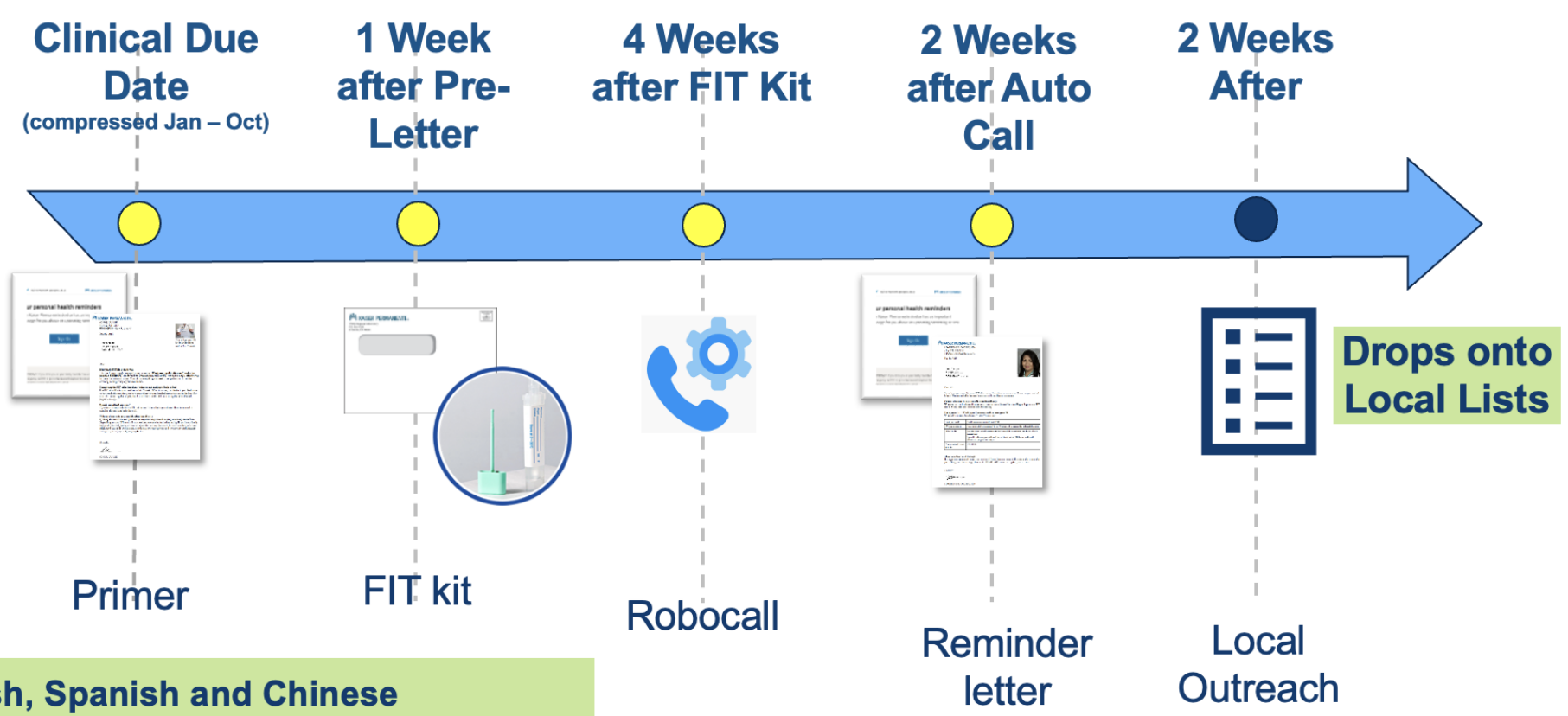
KPNC Organized CRC Screening Program

Population:

Aged 45 - 49

(Maximum 4 outreach attempts at different intervals)



Outreach in **English, Spanish and Chinese**
Special Outreach for African American and Latino Populations

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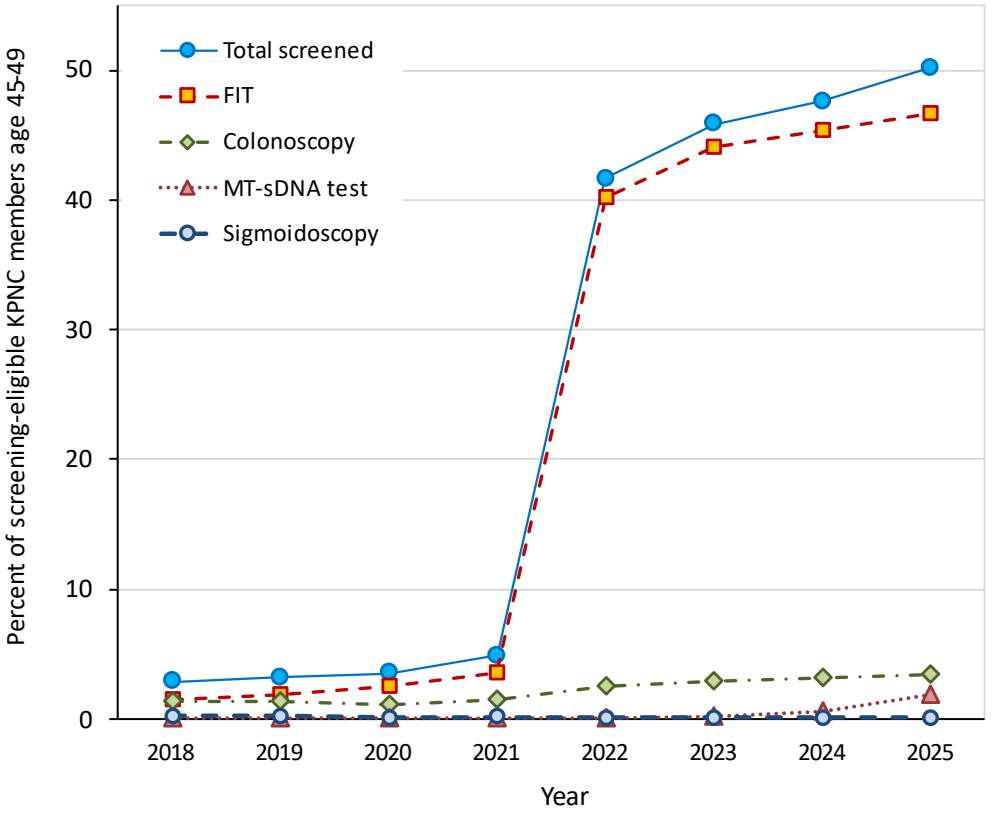
Overall CRC Screening Rates in 45-49-year-olds



	2018	2019	2020	2021	2022	2023	2024	2025
Screening rate	**2.8**	**3.2**	**3.5**	**4.9**	**41.6**	**45.8**	**47.6**	**50.1**
FIT	1.5	1.8	2.5	3.5	40.2	44.1	45.3	46.7
Colonoscopy	1.3	1.3	1.1	1.5	2.5	2.9	3.1	3.4
MT-sDNA	0	0	0	0	0.1	0.1	0.6	1.8
Sigmoidoscopy	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1

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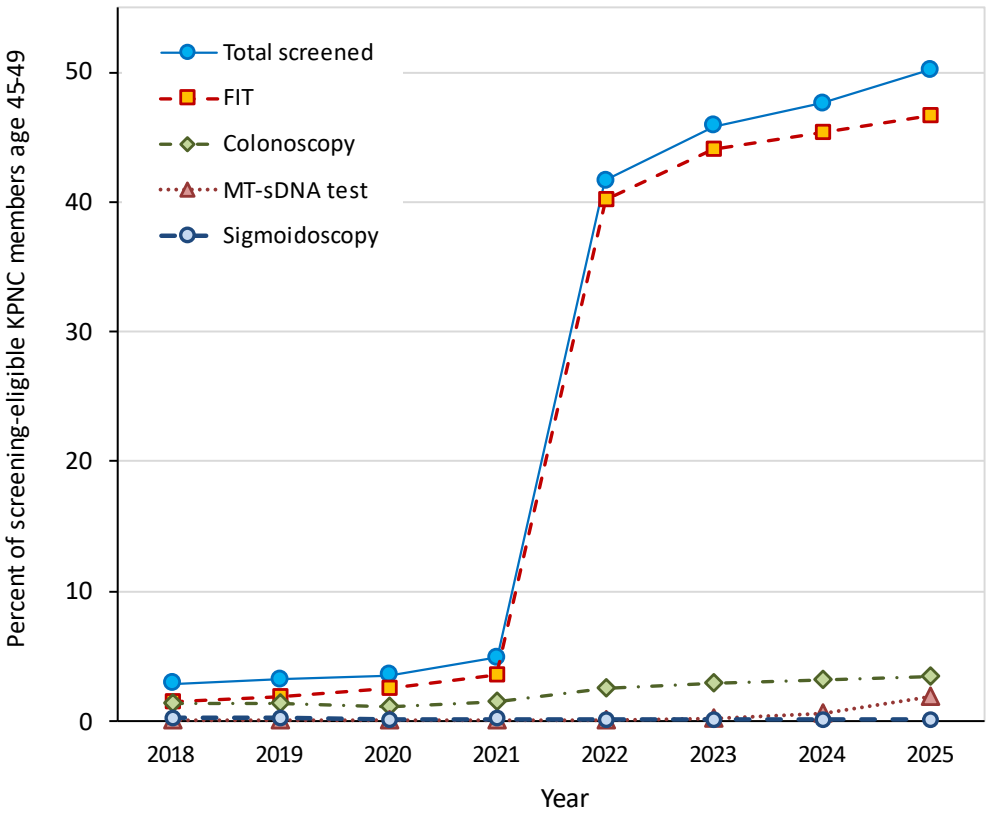

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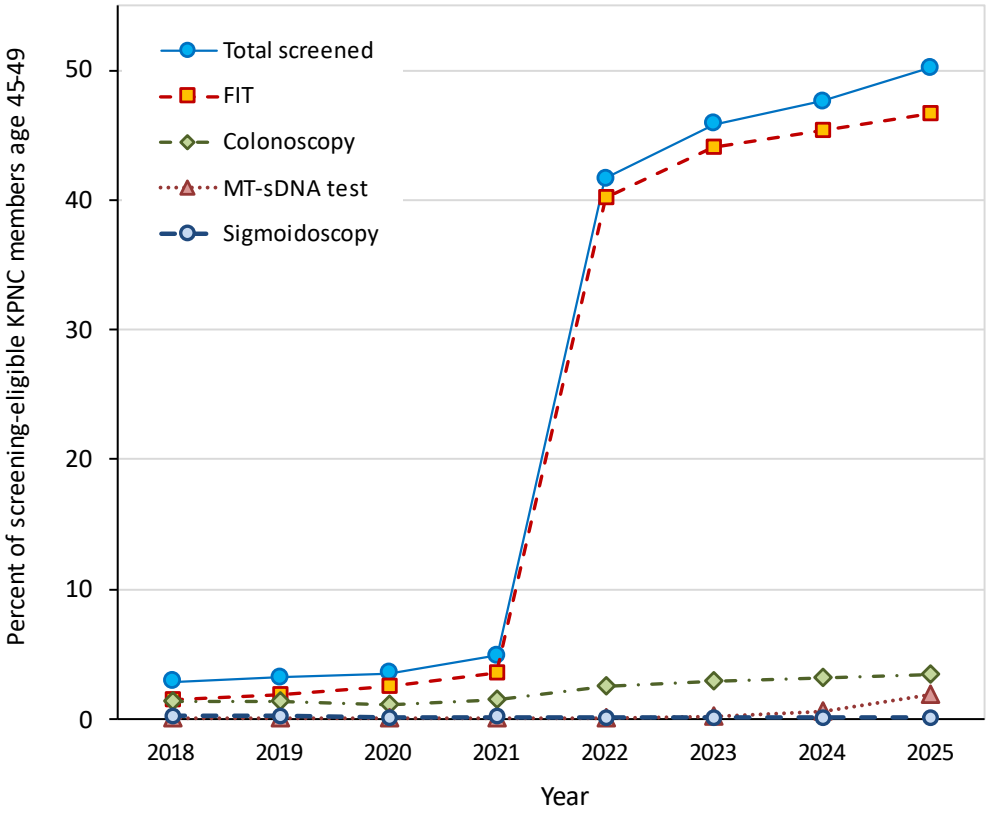

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CRC Screening Rates Among Young Adults by Sex

	2018	2019	2020	2021	2022	2023	2024	2025
Men	2.7	3.0	3.3	4.8	40.7	44.2	46.1	48.3
Women	3.0	3.4	3.7	5.0	42.6	47.5	49.2	52.0

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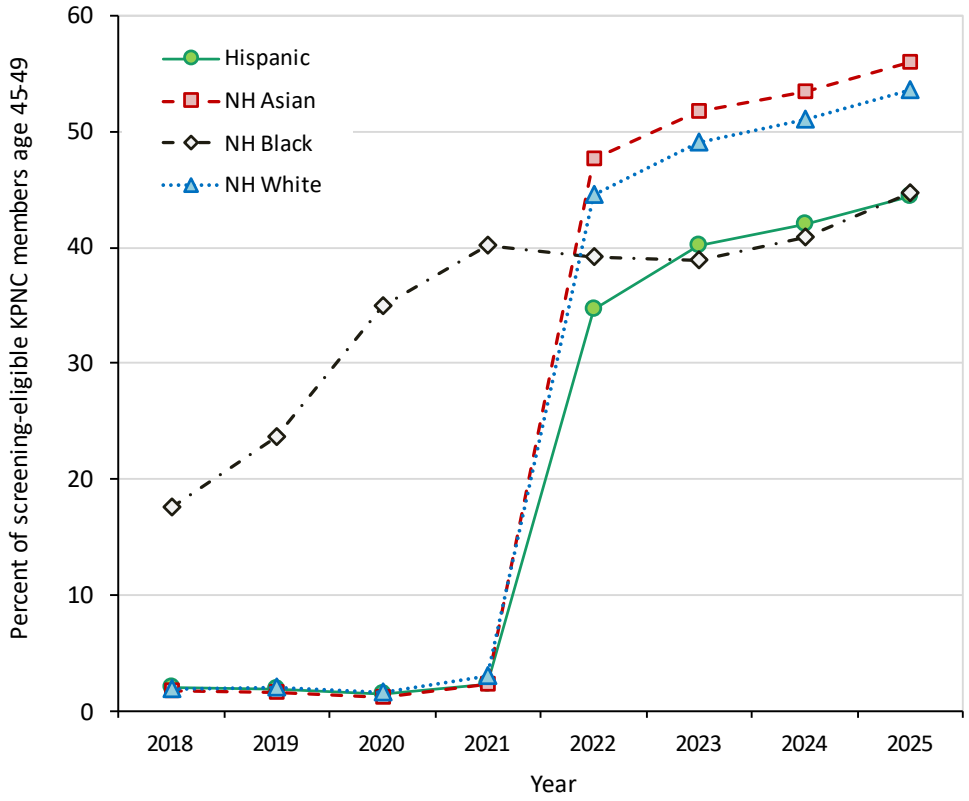
CRC Screening Rates Among Young Adults by Race/Ethnicity



	2018	2019	2020	2021	2022	2023	2024	2025
White	1.9	2.0	1.6	2.9	44.5	49.1	51.1	53.6
Asian	1.7	1.6	1.2	2.3	47.6	51.7	53.4	56.0
Black	17.6	23.6	34.9	40.1	39.2	38.8	40.9	44.7
Hispanic	2.0	1.9	1.5	2.4	34.7	40.1	41.9	44.4

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Summary

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Summary

- Growing evidence supports screening in young adults 45-49 years is beneficial
- Most countries have not lowered the screening age to 45 years
- Mailed FIT outreach is the most effective strategy for population-based screening
- Screening rates remain suboptimal in young adults in the US (<50%)
- Additional interventions are needed to further boost screening participation overall and among individual demographic groups

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