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- PowerPoint Presentation is allotted 60 minutes and last 30 minutes for Q&A session, total of 90-minute webinar, 1.50 CME credits for L.A. Care Providers and other Physicians, 1.50 CE credits for NPs, RNs, LCSWs, LMFTs, LPCCs, LEPs, and other healthcare professionals. Certificate of Attendance will be provided to webinar attendees without credentials.
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- Within two (2) weeks after webinar and upon completion of the online survey, you will receive the PDF CME or CE certificate based on your credential and after verification of your name and attendance duration time of at least 75 minutes for this 90-minute webinar.
- The PDF webinar presentation will be available within 6 weeks after webinar date on lacare.org website located at <https://www.lacare.org/providers/provider-central/provider-programs/classes-seminars>
- Any questions about L.A. Care Health Plan's Provider Continuing Education (PCE) Program and our CME/CE activities, please email Leilanie Mercurio at [lmercurio@lacare.org](mailto:lmercurio@lacare.org)



## Presenter's Bio

Fola May, MD, PhD, MPhil, is an Associate Professor of Medicine at the David Geffen School of Medicine at University of California Los Angeles (UCLA), Director of Quality Improvement in the Vatche and Tamar Manoukian Division of Digestive Diseases, Director of the May Laboratory, Associate Director of the UCLA Kaiser Permanente Center for Health Equity, and staff physician in the Veterans Affairs (VA) Greater Los Angeles Healthcare System.



Dr. May's research is funded by several agencies, including the National Institutes of Health (NIH), and aims to improve population preventive health strategies, increase access to cancer preventive services, and eliminate health disparities domestically and internationally.

# An Update on Colorectal Cancer

Folasade P. May M.D., Ph.D., M.Phil.

Associate Professor of Medicine

University of California Los Angeles

Veterans Health Administration

September 28, 2023 | WebEx, 12:00 pm – 1:30 pm PST, 1.50 CME / CE Credits

Directly Provided CME / CE Activity by L.A. Care Health Plan

# Disclosures

## Folasade P. May MD PhD MPhil

**Consultant/Advisor for:** Kimberly-Clarke/Cottonelle; Takeda; Seed Global Health; Medtronic; Johnson & Johnson; Freenome; Owl Peek Laboratories; Saint Supply

**Grant/Research support:** National Institutes of Health, National Cancer Institute; Veterans Affairs HSR&D; Exact Sciences; Tobacco-Related Disease Research Program; Broad Institute; Stand up to Cancer

**Employee of:** UCLA Health; Veterans Health Administration

*I will not discuss off label use and/or investigational, device, product or medication use in my presentation.*

# Disclosures

The following CME planners do not have any financial relationships with ineligible companies in the past 24 months:

- Leilanie Mercurio, L.A. Care Provider Continuing Education (PCE) Program Manager, CME Planner
- Bridget Freeley, American Cancer Society Associate Director, State Partnerships, CME Planner

All relevant financial relationships of Dr. Folasade May, CME Presenter, with listed ineligible companies have been mitigated.

An ineligible company is any entity whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

Commercial support was not received for this CME activity.

# Presentation Overview

- Colorectal cancer (CRC) is common, even in young adults.
- Screening for CRC is effective.
- Overview of screening guidelines and tests.
- Screening utilization and barriers to screening.
- Achieving equity in CRC.
- Future priorities.



# Learning Objectives

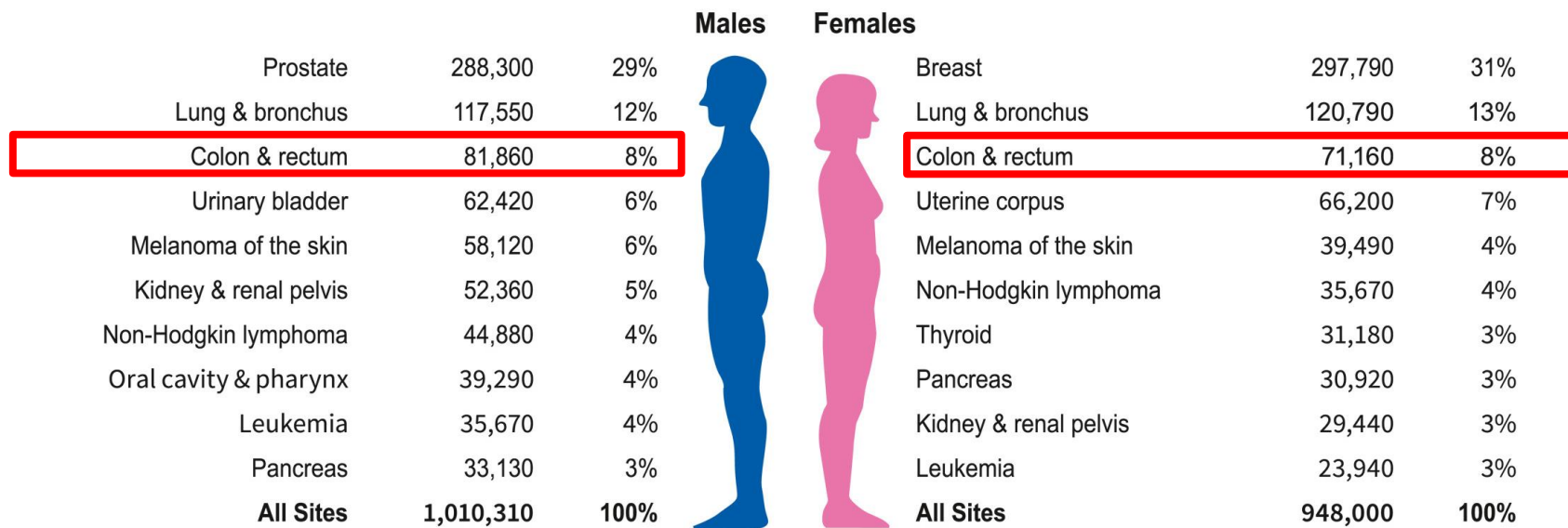
At the completion of the activity, learners can:

1. Summarize updated colorectal cancer screening guidelines.
2. Identify at least 3 symptoms of colorectal cancer.
3. Specify recommendations about colorectal cancer screening modalities.
4. List at least 3 effective interventions to reduce disparities in colorectal cancer screening.



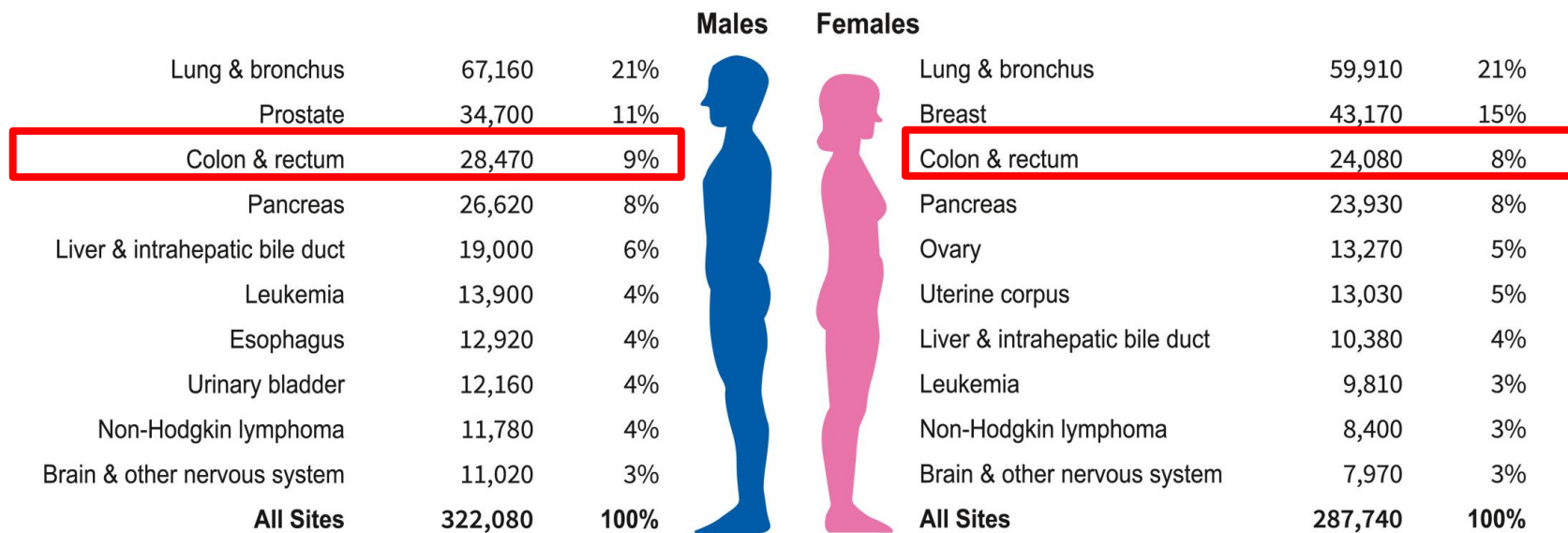
# Colorectal Cancer is Common

*#3 cause of cancer in men and women in the United*

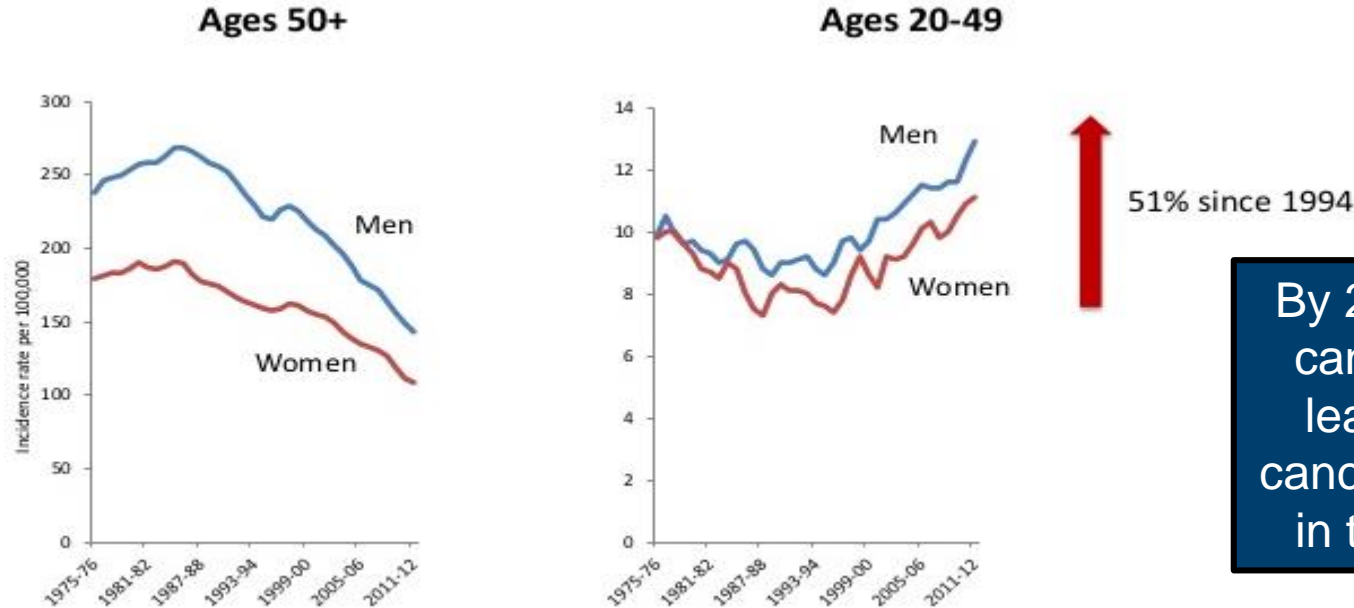


# Colorectal Cancer is Deadly

## #2 cause of cancer-related deaths in the United States



# Cases are Rising in Young Adults



By 2040, colorectal cancer will be the leading cause of cancer-related death in this age group.

***There has been a 51% increase in CRC incidence in individuals aged 20-49 since the early 1990s.***

# What's the Colon for Anyway?

## The **colon and rectum**:

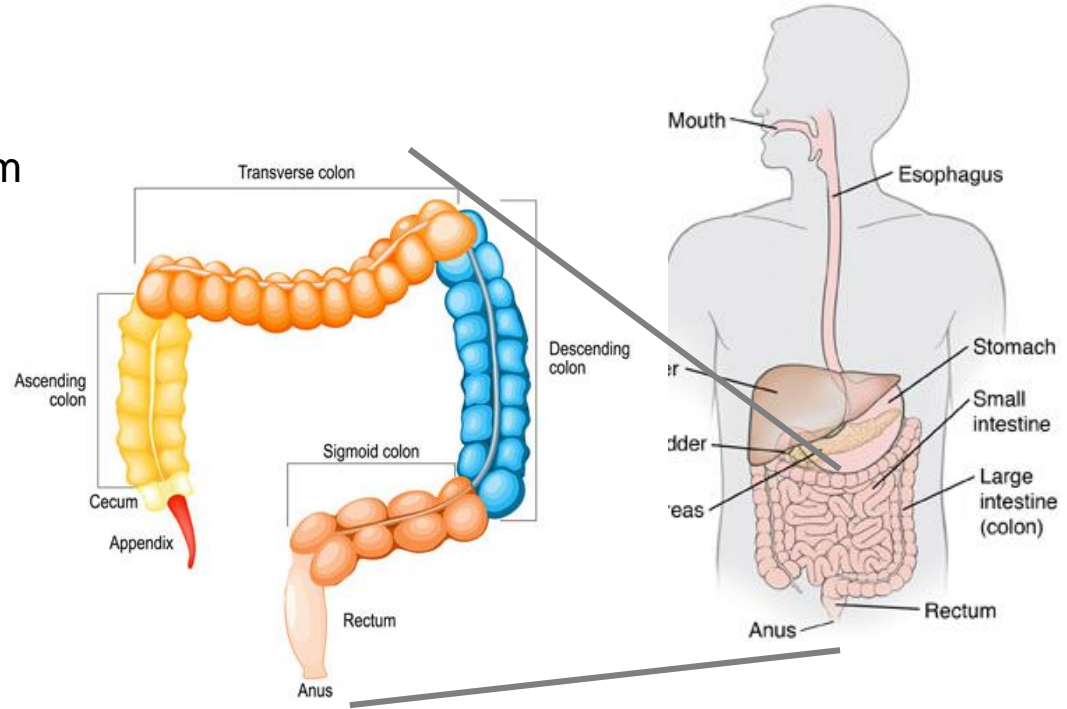
- Large intestine or large bowel
- Last parts of the digestive system

## The **colon** functions to:

- Absorb water and salt from food
- Form stool

## The **rectum** functions to:

- Store stool until ready to pass



# Everyone is at Risk

## Risk Factors You Can Not Change

- Age
- Male genotype
- Race (Black Americans)
- Personal history of polyps
- Family history of polyps or cancer
- Inflammatory bowel disease (IBD)
- Inherited polyp syndromes

## Risk Factors You Can Change

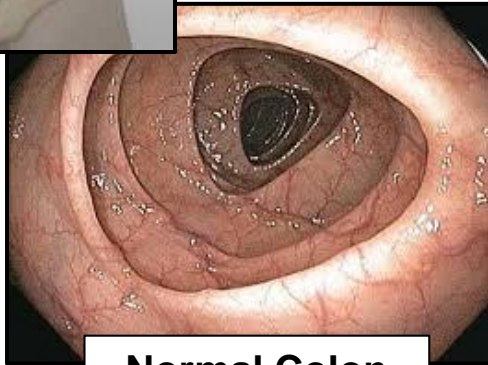
- Diet:
  - Low fiber diet
  - High in animal fat
- Physical inactivity
- Obesity
- Type 2 diabetes
- Tobacco
- Heavy alcohol



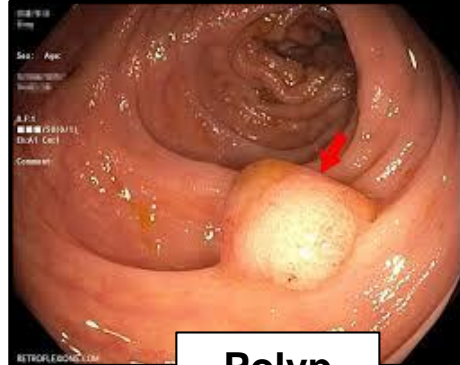
# Colorectal Cancer Originates as Polyps



**Colorectal cancer** develops when the cells in polyps begin to grow **uncontrollably**.



**Normal Colon**



**Polyp**



**Colorectal Cancer**

*How can I prevent colorectal cancer?*



# USPSTF Recommended Screening Modalities

(Average-risk individuals)

## Stool-based strategies



High Sensitivity  
FOBT *annually*



Fecal Immunochemical  
Test (FIT) *annually*



FIT-DNA (Cologuard)  
*Every 1-3 years*

## Direct-visualization techniques



Virtual (CT) Colonography  
*Every 5 years*



Flexible Sigmoidoscopy with  
(Q10Y) or without FIT (Q5Y)



Colonoscopy  
*Every 10 years*



# Colonoscopy



- **Performed** in a hospital or medical clinic
- Requires **bowel preparation**
- Gastroenterologist uses a “colonoscope,” a long flexible tube with a light at the end
- Requires conscious **sedation** or monitored anesthesia care
- Examines the walls of the colon (20-30 minutes)
- Risks are very small (1:1000) and include bleeding, infection, and colon injury
- Considered the **gold standard** for finding colon cancer or precancerous polyps
- If normal, repeated every 10 years

# What is a Colonoscopy Like?

A survey of almost **50,000** patients:

- Most (about 8 out of 10) said the colonoscopy was less uncomfortable than they expected.
- People often agree that “It’s not as bad as I thought.”



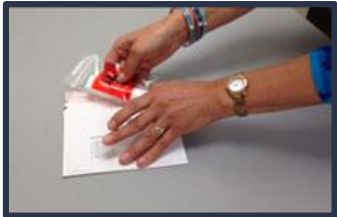
Several studies have found **high levels of patient satisfaction** and **willingness to return** under the same conditions.



# Fecal Immunochemical Test (FIT)

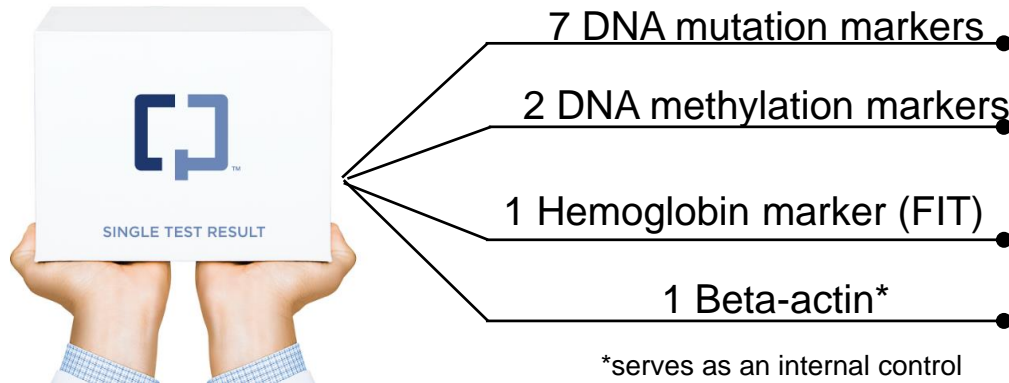


- Second most common screening test
- Stool-based test that can be performed at home
- Tests the stool for small amounts of blood which ***may be*** a sign of colon cancer
- **Very low-risk** screening option
- **Must be completed yearly** to be effective
- If abnormal, a **colonoscopy must be** performed to find the source of blood loss



# Multitarget Stool DNA (Cologuard)

- Tests stool for 11 pre-cancer and cancer biomarkers and for human hemoglobin (i.e. DNA+FIT)
- 3-year screening interval
- Test failures and false-positive rate 13%



# CRC Screening is Effective

Test	Evidence	Certainty of Evidence
<b>Flexible sigmoidoscopy</b> (v. no screening)	Incidence reduction (0.78; 0.74- 0.83) Mortality reduction (0.74; 0.68-0.80)	High
<b>Annual gFOBT</b> (v. no screening)	Incidence reduction (0.81; 0.71- 0.93) Mortality reduction (0.68; 0.56-0.82)	Moderate to High

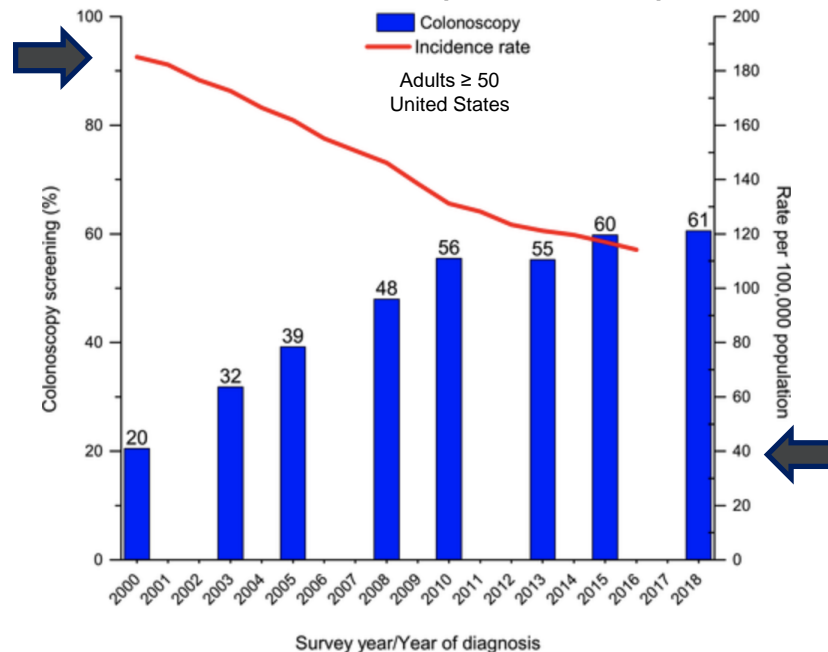
*Guaiac-based FOBT and flexible sigmoidoscopy shown to reduce incidence and mortality in randomized trials*

# CRC Screening is Effective

Most common applied tests today are the fecal immunochemical test (FIT) and colonoscopy:

- Supported largely by observational data
- Inferred benefit due to gFOBT and flexible sigmoidoscopy data.

**Colonoscopy Prevalence (2000 to 2018) and CRC Incidence (2000 to 2016)**

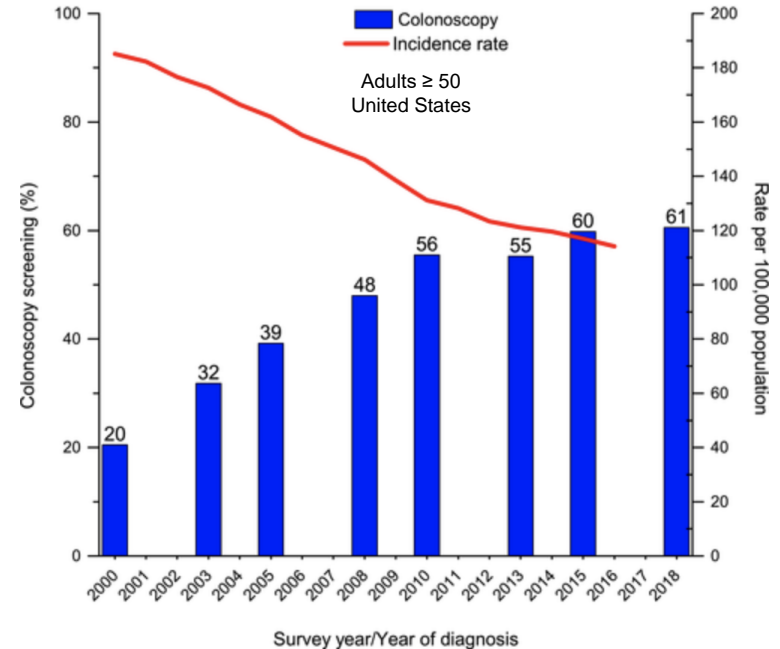


# CRC Screening is Effective

## NORDICC Trial (Poland, Norway, Sweden, Netherlands; 2009-2014)

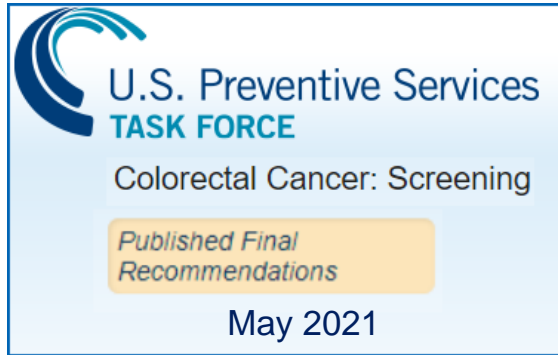
- 84,000 men and women age 55 to 64.
- PPA: 18% incidence reduction; no mortality reduction.
- ITT: 31% incidence reduction; 50% mortality reduction.
- But ...
  - Only 42% completed colonoscopy
  - Relatively few polyps detected
  - Only 10 years of follow-up
  - US population is different
- My key take aways:
  - Setting likely matters
  - Colonoscopy is effective...if completed
  - The benefits of colonoscopy likely take time

## Colonoscopy Prevalence (2000 to 2018) and CRC Incidence (2000 to 2016)



# CRC Screening Should Begin at Age 45

(USPSTF Recommendations for Average-risk individuals)



Adults aged 50 to 75 years	The USPSTF recommends screening for colorectal cancer in all adults aged 50 to 75 years.	A
Adults aged 45 to 49 years	The USPSTF recommends screening for colorectal cancer in adults aged 45 to 49 years.	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

*1 in 3 Americans are unscreened.  
1 in 2 are unscreened in under-resourced settings.*

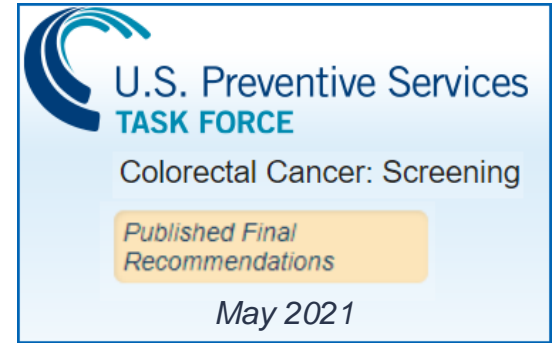


# Age to Start Screening

Risk Group	Age to Start Screening	Age to Stop Screening
<b>Family history of CRC</b>	40 <u>OR</u> 10 years before age of youngest family member diagnosed	Varies
<b>Inflammatory bowel disease; Familial polyposis syndrome; Hereditary colon cancer</b>	Screen early (age varies)	Varies
<b>African-American/Black</b>	45	Grade A: 75 Grade C: 85
<b>Average Risk</b>	45	Grade A: 75 Grade C: 85

# 2021 USPSTF CRC Recommendations

- Recommendations based on two commissioned reports:
  - 1) Systematic review of benefits and harms of screening adults 40 years or older:
    - a) Effectiveness and accuracy of screening tests
    - b) Comparative effectiveness of screening tests
    - c) Serious harms of different screening tests.
  - 2) Comparative modeling report from the CISNET Colorectal Cancer Working Group:
    - a) Life-years gained
    - b) CRC cases/deaths averted
    - c) Colonoscopy burden
    - d) Harms



# USPSTF Recommended Screening Modalities

(Average-risk individuals)

## Stool-based strategies



High Sensitivity  
FOBT *annually*



Fecal Immunochemical  
Test (FIT) *annually*



FIT-DNA (Cologuard)  
*Every 1-3 years*

## Direct-visualization techniques



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*Every 5 years*



Flexible Sigmoidoscopy with  
(Q10Y) or without FIT (Q5Y)



Colonoscopy  
*Every 10 years*

# Non-colonoscopic Screening Tests are Two-Step Strategies



**Abnormal screening  
result**



**Colonoscopy**

**Completed in only  
50% people in U.S.**

# Test Characteristics of Screening Tests

Test	Sensitivity for CRC	Sensitivity for adv. Adenoma	Specificity for CRC	Evidence	Risk	Deaths averted per 1000 screened
<b>High sensitivity guaiac FOBT</b>	62-79%	7%	87%-96%	Strong	Low	26
<b>FIT</b>	76-95%	27%-47%	89%-96%	Weak	Low	26
<b>FIT-DNA (Cologuard)</b>	93%	43%	85%	Early	Low	28 (yearly) 25 (Q 3 years)
<b>CT Colonography</b>	96%	67%-94% (>10mm) 73%-98% (6mm)	86%-98% (>10mm) 80%-93% (>6mm)	Weak	Low	26
<b>Flexible Sigmoidoscopy</b>	58-75%	72%-86%	92%	Strong	Intermediate	24 (28 with FIT)
		89%-98% (>10mm)		Davidson K, et al. JAMA. 2021;325(19):1965-1977. Knudsen et al. JAMA. 2021; 325(19): :1998-2011. Interm		

# Patient Considerations for Screening Options

	HSgFOBT	FIT	FIT-DNA	CT Colonography	FS (+ FIT)	Colonoscopy
<b>Invasiveness</b>	+	+	+	++	++	+++
<b>Home test</b>	Yes	Yes	Yes	No	No	No
<b>Dietary restrictions</b>	Yes	No	No	Yes	Yes	Yes
<b>Interval</b>	1 year	1 year	1-3 years	5 years	5 (10 years)	10 years (if normal)
<b>Complications</b>	Negligible	Negligible	Negligible	Few	Few	Low (0.1%)
<b>Patient Participation</b>	Moderate	Moderate	Moderate	Moderate	Moderate	Lowest
<b>Cost</b>	\$	\$	\$\$	\$\$	\$	\$\$

# Emerging Non-Invasive Strategies

(Not yet recommended for first-line average-risk)



New Stool-  
Based Tests



Blood-Based/  
MCED



Wireless Capsule  
Colonoscopy



Urine-based

## High Risk Groups

- Personal history of tubular adenomas or CRC
- Family History of CRC/polyps
- Ulcerative colitis
- Crohn's disease



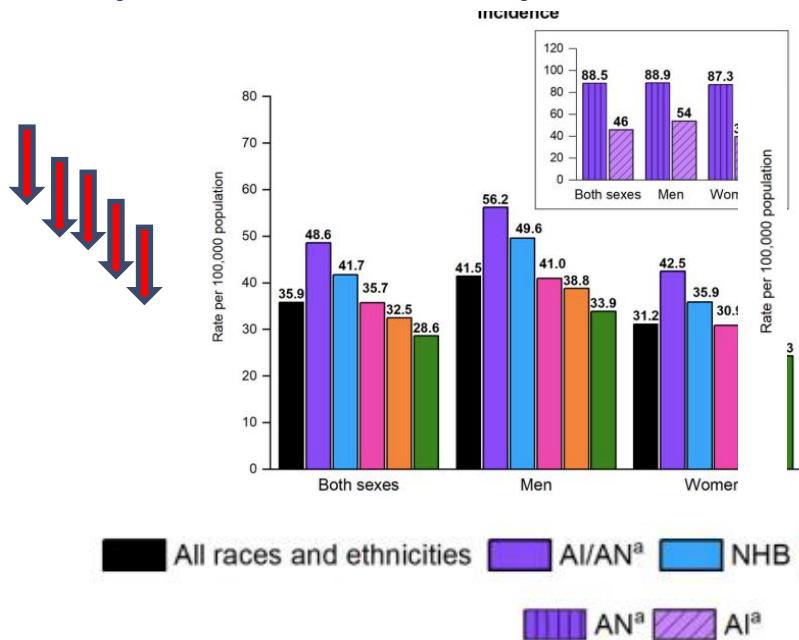
**Colonoscopy**



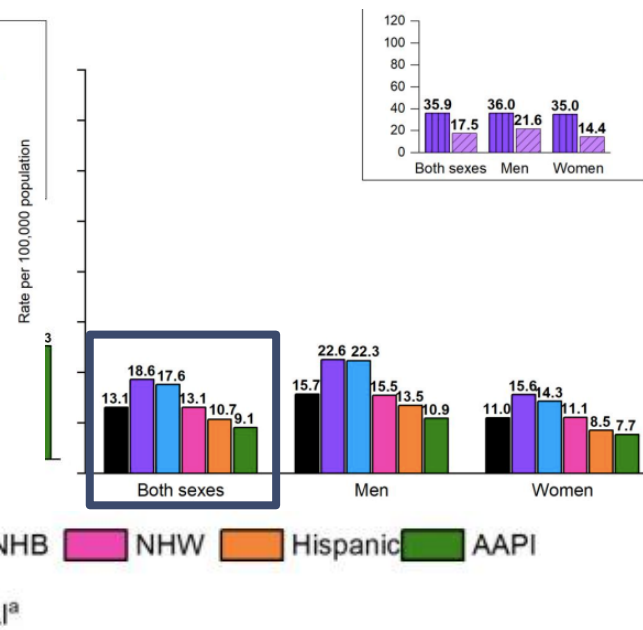
# Screening Utilization and Barriers to Screening in the Underserved

# CRC Outcomes Vary by Race/Ethnicity

Colorectal cancer incidence (2015–2019)  
by sex, race, and ethnicity; US

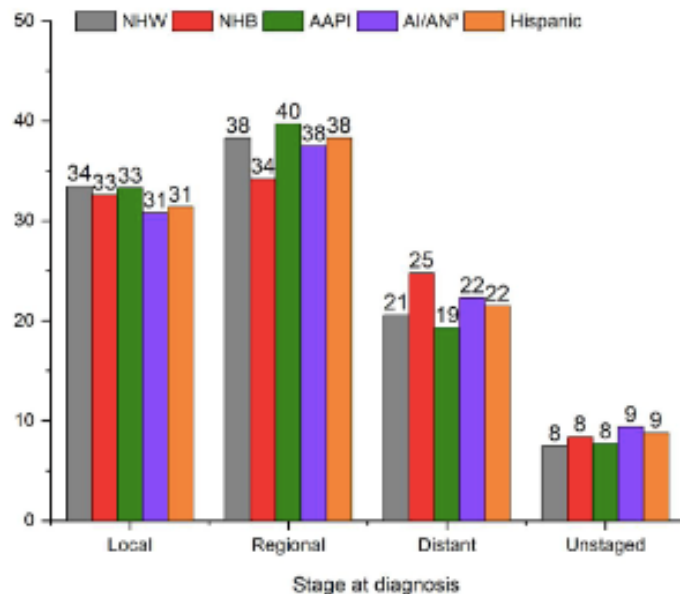


Colorectal cancer mortality (2016–2020)  
by sex, race, and ethnicity; US



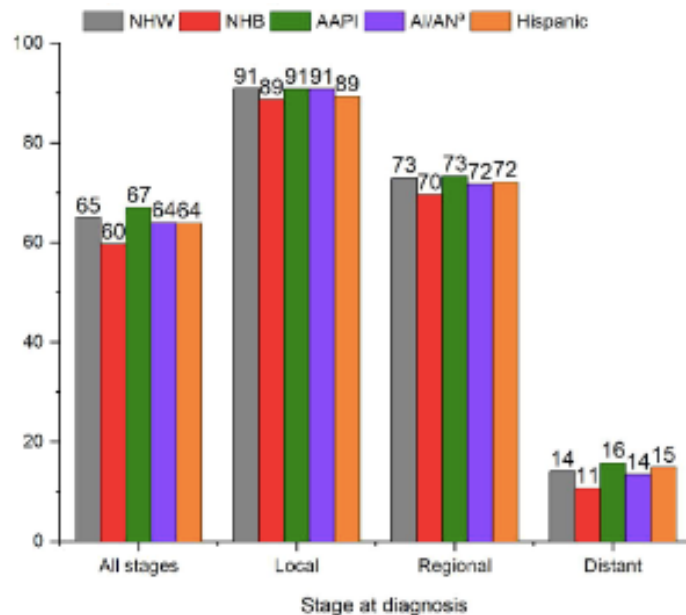
# CRC Outcomes Vary by Race/Ethnicity

**CRC stage distribution in US by race/ethnicity;  
2015-2019**



# CRC Outcomes Vary by Race/Ethnicity

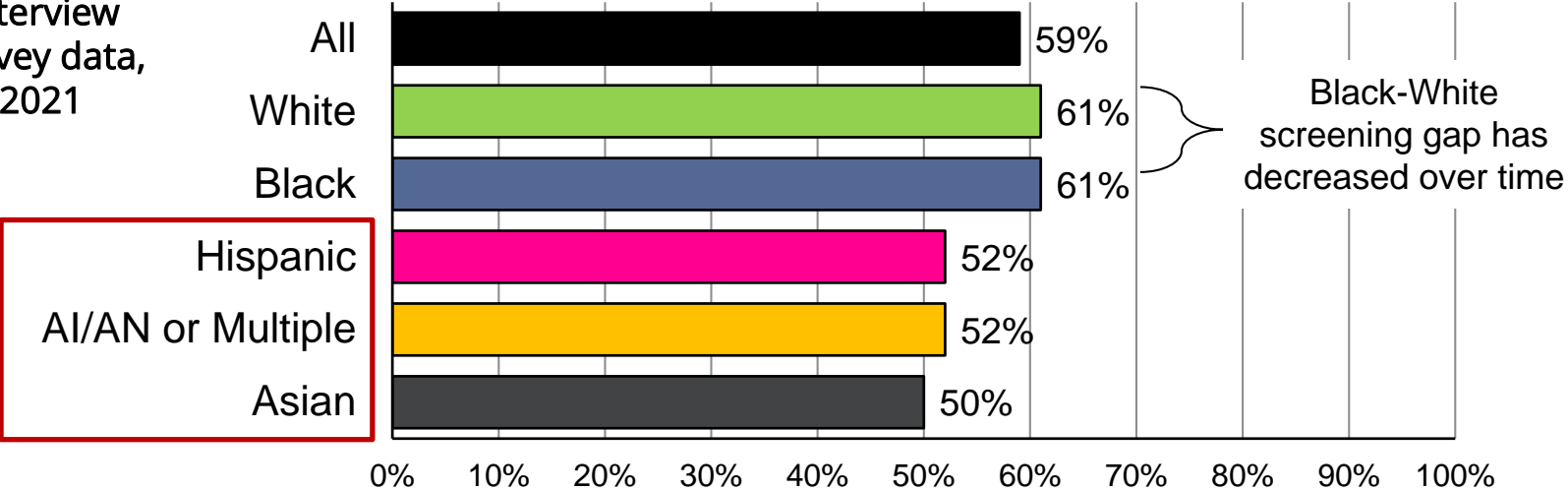
**CRC 5-year survival in US by race/ethnicity;  
2012-2018**



# Screening Participation Contributes to Outcome Disparities by Race/Ethnicity

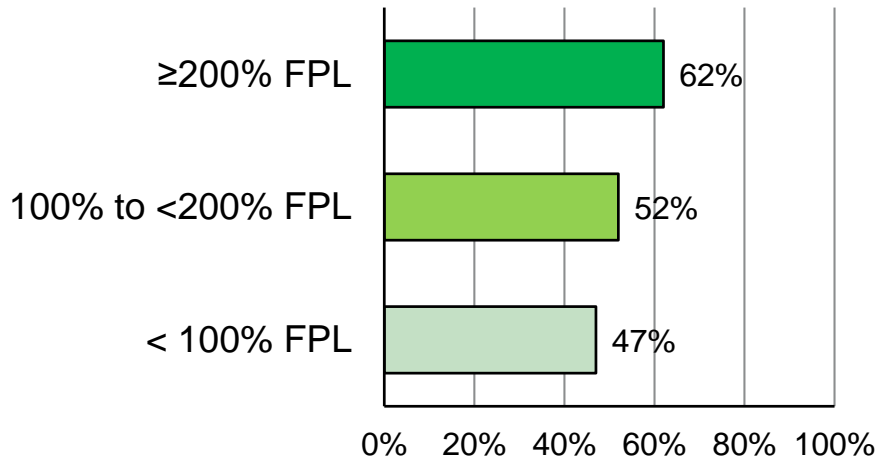
National Health Interview Survey data, 2021

### Screening Rates by Race/Ethnicity, 2021, US

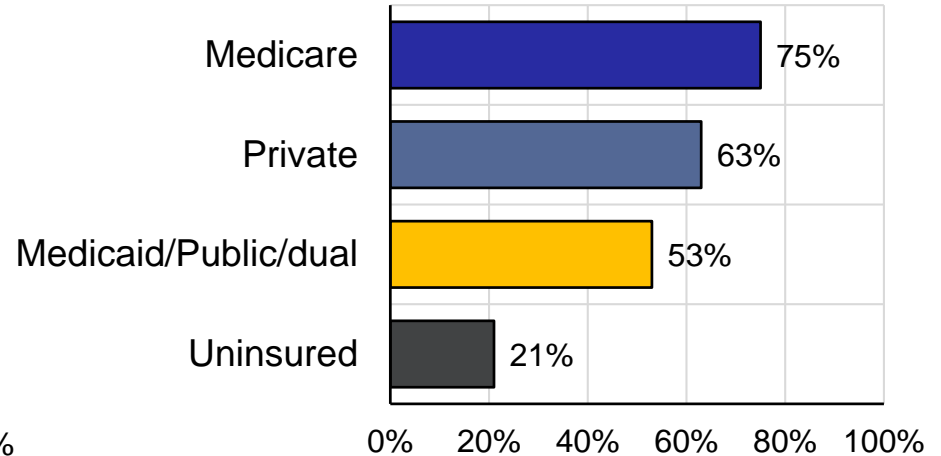


# Screening & Social Determinants of Health

Screening Rates by Income, 2021, US

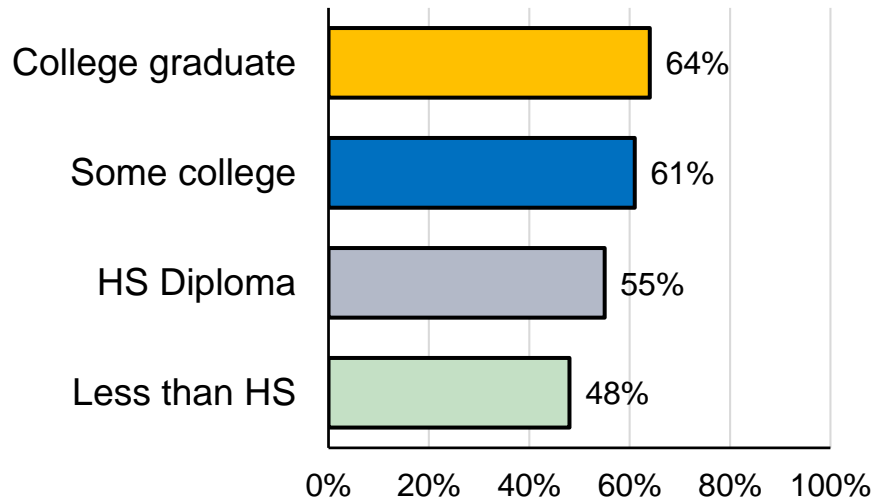


Screening Rate by Insurance Type, 2021, US

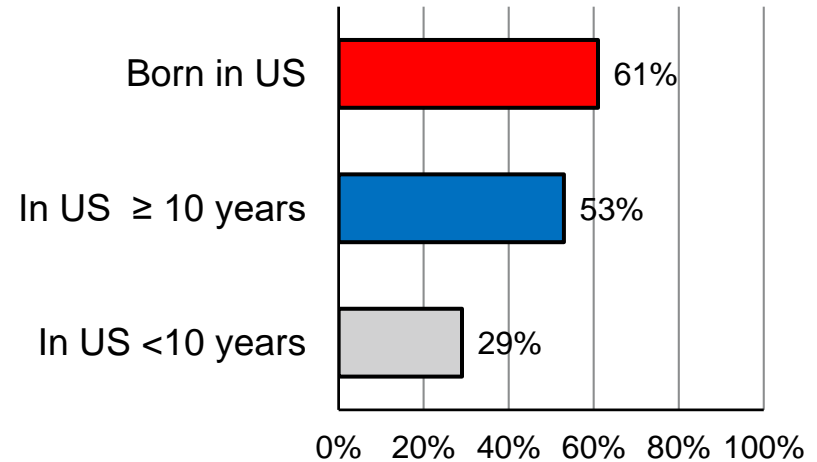


# Screening & Social Determinants of Health

Screening Rates by Education Level, 2021, US

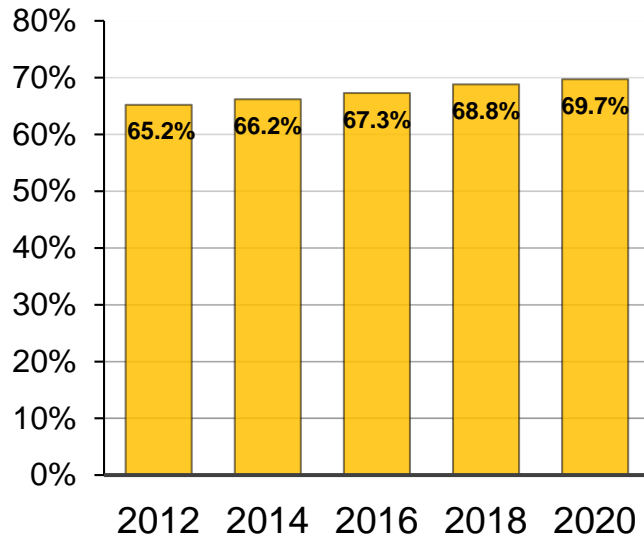


Screening Rates by Immigration Status, 2021, US

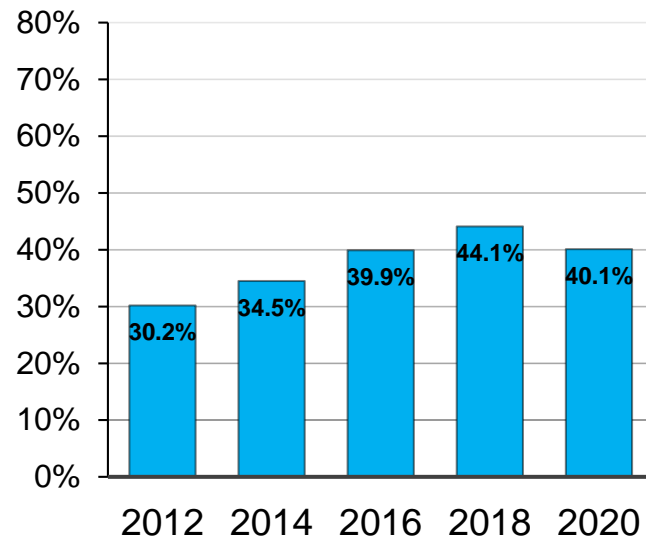


# Screening Rates are Low in Safety-Net Care Settings

**U.S. adults age 50–75 years  
up-to-date with CRC screening**

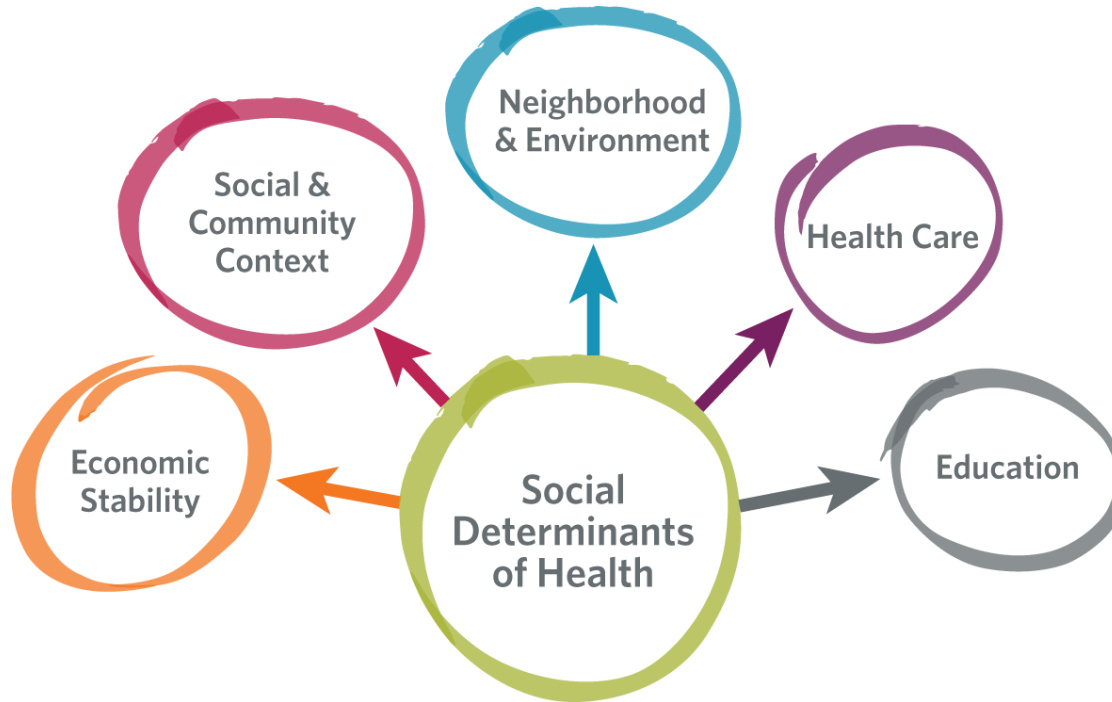


**U.S. FQHC patients age 50–75 years  
up-to-date with CRC Screening**





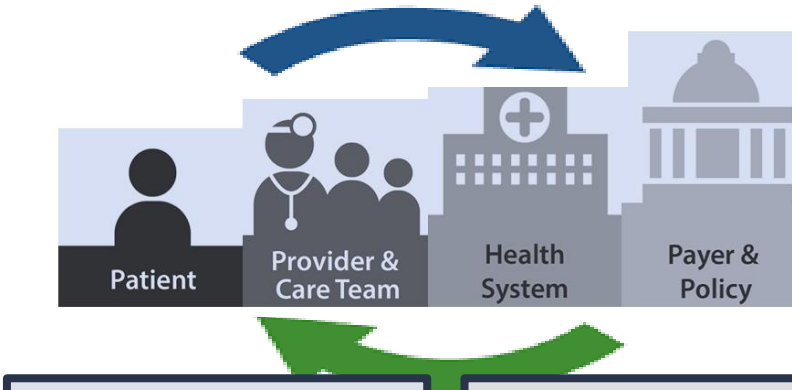
# Social Determinants of Health



# Barriers to Screening in the Medically Underserved

## Patient-Level Factors

- Lack of Knowledge
- Beliefs/Cultural factors
- Health Literacy
- Language
- Fear of procedure/prep
- Fear of cancer diagnosis
- Distrust
- Concerns re: provider quality
- Distance to endoscopy
- Cost/Lack of Insurance
- Comorbidities
- Competing demands
- Logistical challenges
- Lack of escort
- Time off work



## Provider-Level Factors

- Knowledge/ Beliefs
- Practice setting
- Lack of recommendation
- Counseling practices
- Bias (implicit/explicit)
- Discrimination
- Time constraints
- Perceived need
- Support/Resources

## System-Level Factors

- Access to endoscopy
- Colonoscopy capacity
- Quality of Care
- Reminder systems
- Care coordination
- Coverage policy

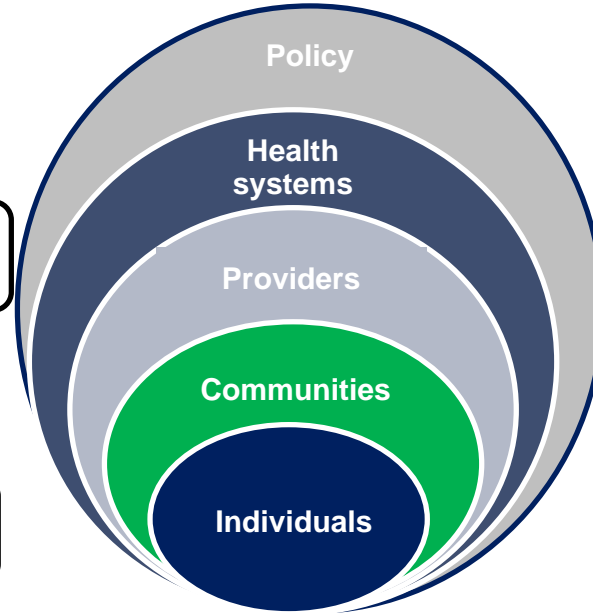
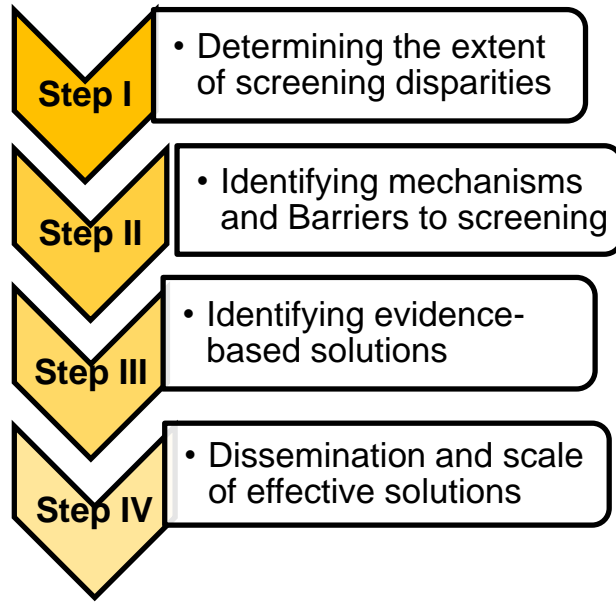
## Policy-Level Factors

- Screening guidelines
- Insurance access
- Insurance mandate policy
- Coverage policy
- Cost/Co-pay policy

Williams R et al, Clin Transl Gastroent. 2016.  
White P, Itzkowitz S. Curr Gastro Rep, 2020.  
Carethers JM, Doubeni CA. Gastro, 2020.  
May FP et al, J Ca Educ, 2016.  
May FP et al. Am J Gastroenterol, 2015.  
May FP et al. Med Care, 2019.

# Using Implementation Science to Increase Screening Participation and Eliminate Disparities

## Implementation Science Evolution



Intervention Feature Considerations	
Targets one level	Targets multiple levels (“multi-level”)
Single component	Multiple components
Generic	Culturally tailored
Developed externally	Developed with stakeholders

# Patient-focused Intervention: Navigation

**Patients, setting:** Low-income Black and Latino individuals age 50-75 years. One large medical center in Boston. N=843

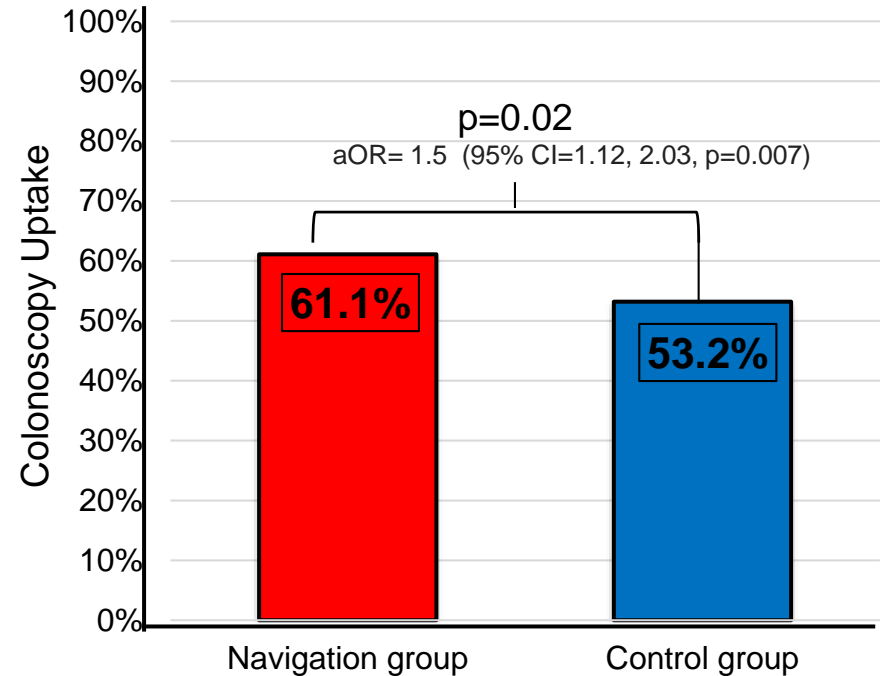
**Design:** RCT.

## Intervention

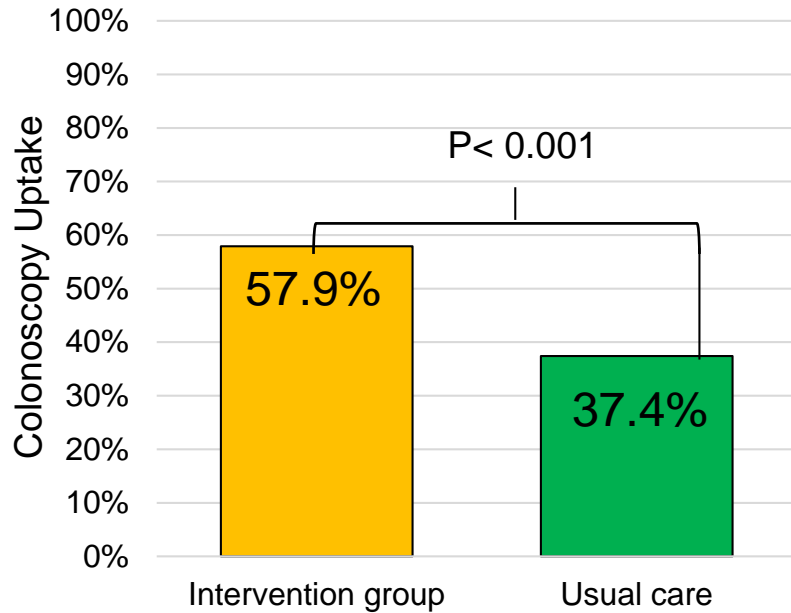
**Arm 1:** Telephone-delivered individualized education by two bilingual navigators.

**Arm 2:** Usual care

**Outcome:** Colonoscopy completion within 6 months



# System-level Intervention: Mailed FIT



**Patients, setting:** Safety-net system (8 clinics); Majority Black and Latino patients age 50-75 years. N=10,820.

**Design:** Cluster randomized trial

## Intervention

**Arm 1:** Mailed postcard + telephone call + mailed FIT kit + Reminder call

**Arm 2:** Usual care

**Outcome:** Screening participation at 1 year

# System-level: Screening improvements reduce incidence and mortality disparities

**Patients, setting:** Kaiser Permanente Northern California health plan patients; 11% Black individuals; age 50-75 years. N=792,081.

**Design:** Retrospective cohort

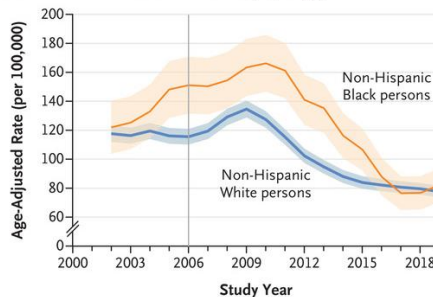
## Intervention

Organized, multilevel screening program fully implemented by 2008. Patients followed through age 79.

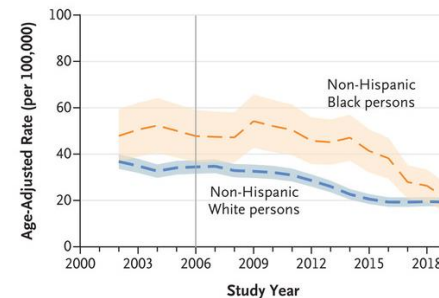
**Outcome:** Screening participation at 1 year

## CRC incidence & mortality by race, 2000–2019

Overall Incidence of Colorectal Cancer (any stage)



Death from Colorectal Cancer



# Beyond Screening Interventions

Access to high-quality screening tests  
Risk stratification  
Family history documentation  
Identify people with symptoms  
Promotion/access to genetic testing  
Community interventions

Increase  
Prevention/Early  
Detection

Improve  
Treatment

Barriers to timely treatment  
Access to high-quality treatment  
Representation in clinical trials  
Address implicit/explicit bias in care  
Increase workforce diversity

Reduce Risk  
Factors

Lifestyle interventions  
Dietary interventions  
Chemoprevention  
Longitudinal studies in diverse settings  
Reduce environmental exposures

Reduce  
CRC  
Disparities

Optimize  
Survivorship

Determinants of post-diagnosis care  
Long-term follow-up care  
Chemoprevention  
Optimize quality of life

# Diet Modification

- Minimize processed meats:
  - Ham, bacon, hot dogs, raw sausages (salami), bologna, blood sausage, pate, meat spreads, cold cuts, canned meats, corned beef
- Minimize red meats:
  - Beef, pork, lamb, goat
- Increase intake of:
  - Whole grains, fiber, fruit, non-starchy vegetables, vitamin C-rich foods, fish, vitamin D





# Other Lifestyle Changes

- Obesity and diabetes prevention
- Increase physical activity
- Drink alcohol in moderation
  - *Maximum of 2 drinks/day for men; 1 drink/day for women*
  - *Maximum 14 units/week for men and women*
- Avoid tobacco



# Key Take Away Points

- CRC is common and deadly but is largely preventable with screening.
- Screening for CRC is evidence-based and recommended for all adults but underutilized.
- Screening should begin at 45 for average-risk individuals (& earlier in high-risk groups).
- There are several recommended screening modalities, and patients should select the modality most appropriate for them.
- Additional prevention strategies include diet modification and avoidance of obesity, tobacco, and heavy alcohol.
- Disparities in screening utilization contribute to inequities in CRC outcomes and warrant tailored, targeted interventions.



# Frequently Asked Questions (FAQs)

1. What is the USPSTF recommended age to initiate colorectal cancer screening in average-risk adults?

Age 45. This change was made in May of 2021.

2. When should individuals with a family history of colorectal cancer initiate screening?

40 OR 10 years before age of youngest family member diagnosed

3. What is the best colorectal cancer screening test for average-risk individuals?

Any of the 7 recommended by USPSTF. “The best test is the test that gets done”

4. What is the appropriate age to stop colorectal cancer screening?

Grade A: 75; Grade C: 85

# Thank You!

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# Q & A Session



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***Thank you!***