## 2022 NCCRT Annual Meeting

#### CONCURRENT SESSION 3 NCI RESEARCH UPDATES





#### Research Updates from NCI Grantees



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#### Amanda Petrik

Affiliate Investigator Kaiser Northwest Center for Health Research



#### **Doug Corley** MD, PhD *Research Scientist Kaiser Permanente (by video)*



#### **Ronit Dalmat** MPH, PhD *Research Scientist University of Washington*



#### Chyke Doubeni

MD, MPH Chief Health Equity Officer Ohio State University

## Research Updates from the National Cancer Institute: Results from the ACCSIS, PROSPR, and SCOLAR Studies

Pamela Marcus and Erica S. Breslau

*November* 17, 2022





# *Goal*: Advance understanding of how to prevent, detect, and treat CRC.



# ACCSIS

Accelerating Colorectal Cancer Screening and Follow-Up Through Implementation Science

*Goal:* Generate implementation strategies that substantially improve CRC screening and follow-up rates in populations where baseline rates remain low.

*Consortium:* One Coordinating Center, 5 Research Projects, and 3 American Indian Research Projects.

Emphasis: Addresses disparities:

- Underserved racial and ethnic minority populations
- Rural and hard-to-reach populations
- High-risk subgroups



Population-based Research to Optimize the Screening PRocess

*Goal:* Improve the cancer screening process in community healthcare settings in the United States.

Consortium: One Coordinating Center and 10 Research Projects.

*Emphasis*: Multilevel observational research to evaluate factors that affect the quality & outcomes of the screening processes for cervical, colorectal and lung cancers.

## SCOLAR

Effectiveness of Screening Colonoscopy for Reducing Deaths from Colorectal Cancer *Goal:* Estimate the effectiveness of FIT or colonoscopy in reducing CRC mortality risk using observational data from routine clinical practice in a community-based setting.

*Emphasis:* Evaluate CRC screening outcomes according to race/ethnicity over time in this long-term initiative

#### ACCSIS, PROSPR and SCOLAR Study Locations



Created with mapchart.net

# FACCSIS

Accelerating Colorectal Cancer Screening and Follow-Up Through Implementation Science



## It's a Heavy Lift: Implementation of a Colorectal Cancer Screening Program in Rural Areas

#### SMARTER CRC: An ACCSIS Project Pl's: Gloria Coronado and Melinda Davis

Amanda Petrik, Kaiser Permanente Northwest Center for Health Research





## **ACCSIS** Consortium

#### Cancer Moonshot<sup>™</sup> Initiative

The overall aim of ACCSIS is to conduct multi-site, coordinated, transdisciplinary research to evaluate and improve colorectal cancer screening processes using implementation science







# ACCSIS Consortium Locations (ACCSIS1, ACCSIS2, ACCSIS AI)







#### ACCSIS Sites









Screening More patients for CRC through Adapting and Refining Targeted Evidence-based Interventions in Rural settings









### Frontier and Remote (FAR) Disparities





<4% US population; ~46% land





## Study Design

PHASE 1: PILOT	PHASE 2: INTERVENTION	PHASE 3: SPREAD	
Adapted mailed FIT and patient navigation for rural and frontier settings	Ran collaborative program for mailed FIT and patient navigation for abnormal FIT follow-up	Scale-up the program to reach additional health plans, clinical practices, and community organizations	
4 pilot clinical practices (1 health plan)	28 rural or frontier clinical practices (3 health plans)	<ul><li>120 clinical practices</li><li>Deliver Learning Community</li></ul>	
	2021 Deliver Deliver usual SMARTER CRC care (half the program (half clinics) the clinics)	<ul> <li>ECHO Sessions on CRC Screening Outreach</li> <li>Provide Technical Assistance</li> <li>Additional Training and Investmentation Materials</li> </ul>	
	2022 Deliver SMARTER CRC program (all the clinics)		





### Rooted in Evidence Based Practices

#### **Mailed FIT**



#### **Patient Navigation**







## Working with Medicaid Health Plans

- Collaborative Model
  - Adaptation to overburdened clinics
  - Further adaptations needed
- Eligible primary care practices:
  - (a) located in rural areas per above as defined by RUCA or Oregon Office of Rural Health,
  - (b) with more than 30 eligible Medicaid or dualeligible Medicaid/Medicare patients, and
  - (c) having a CRC screening rate as reported in claims less than 60% in 2019.





Cascade Health Alliance, LLC







#### Implementation Challenges: Clinic Recruitment

- Used known strategies to enhance recruitment
- Focused on importance of CRC screening, opportunity to improve patient care
- Offered streamlined intervention with limited burden on clinics
- Extended recruitment January 17, 2020 through April 28, 2021
- Expand touches 177 total touches
- External disruptions (Covid-19, wildfires): make it pandemic proof

We're in a rural area, we don't have the resources of a large metropolitan area. I will take any additional help that I can get to help work with the clinic to teach us better ways, better options, just to make us better. And like I said, especially being in a rural area where we don't have the ability to have mass staff to calculate the data and pull the data and work the data, we'll take any extra help we can get.





#### Implementation Challenges: Eligible Patient Identification

Total clinics	29				
Clinic categories					
Federal designation					
Rural Health Clinic	12 (41%)				
Federally Qualified Health Center	5 (17%)				
Tribal Health Center	1 (3%)				
No Federal Designation	11 (38%)				
Clinic network structure					
Hospital-affiliated clinic	14 (48%)				
Health care network-affiliated clinic	4 (14%)				
Clinic with multiple locations	6 (21%)				
Individual clinic (single location)	5 (17%)				

Electronic Health Record (EHR)					
EHR vendor					
Epic (OCHIN and Community)	16 (55%)				
Greenway Intergy	4 (14%)				
eClinicalWorks	2 (7%)				
Athenahealth	2 (7%)				
NextGen	2 (7%)				
Other (Centricity, Advanced MD, RPMS)	3 (10%)				





#### Implementation Challenges: Eligible Patient Identification

Patient Population Characteristic	<b>Clinics able to provide information</b> (of responding clinics n=28)		
Total number of patients	25 (89%)		
Number of patients aged 50-75	19 (68%)		
Number of Medicaid patients	21 (75%)		
Race of the population	21 (75%)		
Hispanic or Latino (ethnicity of the population)	17 (61%)		
Number of patients ages 50-75 screened for CRC in the prior year	19 (68%)		
Number of patients screened by FIT in the prior year	8 (29%)		
Number of patients with an abnormal FIT, or abnormal FIT with colonoscopy completed w/in 1 year	9 (32%)		





#### Implementation Challenges: CCO (Health Plan) Challenges

				Overall	
	Health Plan 1	Health Plan 2	Health Plan 3	n(%)	
Total Number of Eligible Patients					
based on Health Plan list* (n)	1,705	1,875	2,036	5,616	
Sex and Age					
Female	55%	49%	53%	2,949	(53%)
Age (mean)	58.8	56.9	58.8	58.2	
Ethnicity					
Hispanic	4%	7%	5%	303	(5%)
Unknown Ethnicity	18%	<1%	24%	799	(14%)
Race					
White	73%	56%	61%	3,519	(63%)
Non-White	5%	4%	5%	263	(5%)
Unknown Race <sup>4</sup>	22%	40%	34%	1,834	(33%)
Language					
English	95%	85%	96%	5,173	(92%)
Non-English	4%	4%	3%	226	(4%)
Unknown Language	1%	10%	1%	217	(4%)





#### Implementation Challenges: Multi-level Challenges

- Health Plan (CCO) Challenges
  - Patient information required clinic scrub
  - Communication
  - CCO Timeline
- Clinic Challenges
  - Staffing
  - Territorial
  - Time
  - Workflow Assessment
  - Champions (and anti-Champions)







#### Implementation Challenges: Adaptations

- Changes in FIT
- Working with Vendors
- Move to team based or centralized processes
  - Calls and reminders
  - Navigators Community Health Workers
- Communication







### Maintenance & Scale Up

#### **PHASE 3: SPREAD**

Scale-up the program to reach additional health plans, clinical practices, and community organizations

#### 120 clinical practices

- Deliver Learning Community ECHO Sessions on CRC Screening Outreach
- Provide Technical Assistance
- Additional Training and
   Implementation Materials

- Reviewing eligible patient lists
- Centralizing processes
- Communication

## Invite you all to participate!

#### SmarterCRC@ohsu.edu







## It's a heavy lift, but it's important...

- Implemented the pilot DURING COVID
- Expanding mailing to usual care sites now
- We will mail kits to nearly 5,000 patients in 28 rural clinics
- We are "scaling up" activities







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#### https://westerncrcconsortium.org





### Acknowledgements

- MPIs: Melinda Davis, Oregon Rural Practice-based Research Network (ORPRN) & Gloria Coronado, Kaiser Permanente Center for Health Research (KPCHR)
- Co-I: Michael Leo, Raj Mummadi, Amanda Petrik, Erin Kenzie, Erik Brodt
- SMARTER CRC Team: Jennifer Coury, Katrina Ramsey, Jean Hiebert Larson, Brittany Badicke, Emily Myers, Mackenzie Olson, Maryan Carbuccia Abbott, Anders Herreid-O'Neill Mellodie Seater, Tiff Weekley, Jamie Thompson, Jen Rivelli, Charisma Jenkins
- This study was conducted as part of the NCI-funded consortium The Accelerating Colorectal Cancer Screening and Follow-up through Implementation Science (ACCSIS) Program. The overall aim of ACCSIS is to conduct multi-site, coordinated, transdisciplinary research to evaluate and improve colorectal cancer screening processes using implementation science







### Collaboration between...











## PROSPR Population-based Research to Optimize the Screening PRocess



Data through 2020



11 million fecal tests2.3 million colos222k flex sig36k colorectal cancers

## 



*Colorectal Cancer Screening Research Center:* Optimizing Colorectal Cancer <u>PRE</u>cision and outcomes in <u>CommunIty-baSE</u>d populations (PRECISE)

#### Principal investigators:

Aruna Kamineni & Jessica Chubak Kaiser Permanente Washington Doug Corley Kaiser Permanente Northern California Joanne Schottinger Kaiser Permanente Southern California Celette Skinner & Ethan Halm University of Texas Southwestern/Parkland Health & Hospital System



# Thank You!





## Measuring (and Improving!) Colonoscopy Quality and Impact on Outcomes in 2022

Doug Corley, MD, PhD (by video)





#### Measuring (and improving!) colonoscopy quality and impact on outcomes in 2022

Doug Corley, MD, PhD Kaiser Permanente, Northern California TPMG Director, Delivery Science & Applied Research



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# Thank You!



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#### Risk of Colorectal Cancer and Colorectal Cancer Mortality Among Screen-Eligible Older Adults (76-85y) Who Have **Previously Screened**

Ronit Dalmat, MPH, PhD





Risk of colorectal cancer and colorectal cancer mortality among screen-eligible older adults (76-85y) who have previously screened

#### Ronit Dalmat, PhD, MPH University of Washington



National Colorectal Cancer Round Table 2022



## Adults aged <u>>70</u> years are the fastest growing segment of the U.S. population

(Population by age group, in millions)



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# Adults aged <u>>70</u> years are the fastest growing segment of the U.S. population

(Population by age group, in millions)







SEER Incidence Rates by Age, 2014-2018, SEER 21 Areas By Sex, Delay-adjusted SEER Incidence Rate, All Races (includes Hispanic)





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#### PROSPR

## Evidence for ages 76-85 is limited (Lin et al., 2021)

• Microsimulation models: nearly equivalent life years gained by continuing screening until age 85 vs. 75 years (Knudsen et al., 2021)





## **Research questions**

What is the risk of colorectal cancer and colorectal cancer mortality, for screen-eligible adults ages 76-85y:

1....beginning ten years after a negative <u>colonoscopy</u>

2....beginning one year after a negative <u>fecal occult blood test</u>

















PROSPR Population-based Research to Optimize the Screening PRocess





Risk estimates that account for screening history are difficult to study in older adults.

- 1. Age group exclusion from RCTs
- 2. Observational studies need:
  - Long follow-up (≥12 years)
    - × E.g., colonoscopy 10 years past + follow-up for outcomes (2-8y)
  - o Detailed information from individual patient records
    - E.g., cancer screenings, prior CRC test results, any symptoms that might indicate they need a diagnostic rather than screening test)

### • Very large cohort

× Expectation of lower CRC incidence given the prior testing history (...but how much lower?)







## (Brief) Methods: Populations

- 76-85 year olds in the PRECISE cohort
- Restricted to screening eligible
  - No recent symptoms, prior dx of CRC, or colectomy/proctectomy

Population 1 (Colo): Colonoscopy with negative result (no polyps/adenomas) 10 years ago
 N=25,974 patients
 Population 2 (FIT): FIT with negative result 1 year ago
 N=114,739 patients



 Cumulative incidence functions to estimate <u>incidence</u> and <u>mortality from CRC</u>

• At 2, 5, an 8-years after index date



Index date:
Eligible for screening
→ 10y after neg colonoscopy or
→ 1y after neg. FIT



 Cumulative incidence functions to estimate incidence and mortality from CRC

• At 2, 5, an 8-years after index date





 Cumulative incidence functions to estimate <u>incidence</u> and <u>mortality from CRC</u>

• At 2, 5, an 8-years after index date

Index date: Eligible for screening → 10y after neg colonoscopy or → 1y after neg. FIT **Outcomes**: (1) CRC diagnosis or (2) CRC-attributed death

**Censoring events**: Exit from cohort (not death); colonoscopy with screening indication+180d; FIT +180d (*mortality outcome only*)



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• At 2, 5, an 8-years after index date

Index date: Eligible for screening → 10y after neg colonoscopy or → 1y after neg. FIT **Outcomes**: (1) CRC diagnosis or (2) CRC-attributed death

**Censoring events**: Exit from cohort (not death); colonoscopy with screening indication+180d; FIT +180d (*mortality outcome only*)

**Competing events**: Deaths from non-CRC cause



# Risk beginning 10y after negative colonoscopy

(POPULATION 1)

Published:

Dalmat RR, et. al. Risk of colorectal cancer and colorectal cancer mortality beginning ten years after a negative colonoscopy, among screen-eligible adults 76-85 years old. Cancer Epidemiology Biomarkers & Prevention. 2022. doi: 10.1158/1055-9965.EPI-22-0581.



## Characteristics at index date

	AllAges			
	(N=25974)			
Characteristic	n (%)			
<u>Age group (years)</u>				
76-80	14,220 (54.7)	Skewed to younger ages in the range		
81-85	11,754 (45.3)			
Sex				
Male	10,914(42.0)			
Female	15,060 (58.0)	More females than males		
<u>Et h nicity</u>				
Hispanic or Latinx	3,489(13.4)	Vs. 7.8% in US population 75-84y		
Not Hispanic or Latinx	12,891 (49.6)			
Missing (a saymed not Hispania on Latiny)	$a = a \cdot (a \cdot a)$			
Missing (assumed not Hispanic of Latinx)	9,594(30.9)	۲		
<u>Ra ce</u>				
White	19,593(75.4)			
Black	2,433(9.4)	Similar to US population 75-84v		
Asian	3,074 (11.8)	Similar to os population 75-04y		
Native American/Alaska Native	127(0.5)			
Native Hawaiian/Other Pacific Islander	116 (0.4)			
Multiple or not otherwise specified	142(0.5)			
No race information	1,019(3.9)			
Charlson Comorbidity Index score		$\mathbf{h}$		
0	6,193 (23.8)			
1	5,164(19.9)	Comorbidity burden varied in the population		
2	4,834(18.6)			
3	3,001(11.6)	<b>*</b>		
4	2,423(9.3)			
≥5	3,785(14.6)			
Missing	574(2.2)			



[Dalmat et. al, CEBP. 2022]

#### Cumulative CRC incidence (A) and CRC mortality (B)



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PROSPR

## Results: Estimates (76-85y)

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#### • Cumulative CRC **incidence**:

- **0.39%** (95% CI: 0.31-0.48%) at **2y**
- **1.29%** (95% CI: 1.02-1.61%) at **8y**

#### • Cumulative CRC **mortality**:

- **0.04%** (95% CI: 0.02-0.08%) at **2y**
- **0.46%** (95% CI: 0.30-0.70%) at **8y**



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- **0.46%** (95% CI: 0.30-0.70%) at **8y**
- No evidence of differences by patient characteristics: age group (76-80 vs. 81-85), sex, comorbidity, ethnicity, or race



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- No evidence of differences by patient characteristics: age group (76-80 vs. 81-85), sex, comorbidity, ethnicity, or race

#### Cumulative mortality from non-CRC causes

8.24% (95% CI: 7.83-8.66%) at 2y
41.45% (95% CI: 38.74-43.16%) at 8y



## Results: Estimates (76-85y)

#### • Cumulative CRC **incidence**:

- **0.39%** (95% CI: 0.31-0.48%) at **2y**
- **1.29%** (95% CI: 1.02-1.61%) at **8y**

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#### Cumulative mortality from non-CRC causes

8.24% (95% CI: 7.83-8.66%) at 2y
41.45% (95% CI: 38.74-43.16%) at 8y



[Draft results. Manuscript in progress]

## Risk beginning 1y after negative FIT

(POPULATION 2)

[Draft results. Manuscript in progress]



#### FIT (negative) + 1y

## Characteristics at index date

	All Ages								
	(N=114,739)								
Characteristic	n (%)								
<u>Age group (years)</u>									
76-80	107,222 (93.4)	Heavily skewed to younger ages in the range							
81-85	7,517(6.6)								
<u>Sex</u>									
Male	49,331 (43.0)								
Female	65,407 (57.0)	More females than males							
<u>Ethnicity</u>									
Hispanic or Latinx	19,115 (16.7)	Vs. 7.8% in US population 75-84y							
Not Hispanic or Latinx	37,190 (32.4)								
Missing(assumed not Hispanic or Latinx)	58,434 (50.93)								
Race									
White	81,646 (71.2)								
Black	8,907 (7.8)								
Asian	15,202 (13.2)								
Native American/Alaska Native	652 (0.6)	Cimilar to UC nonvelotion 75.044							
Native Hawaiian/Other Pacific Islander	677 (0.6)	Similar to US population 75-84y							
Multiple or n ot otherwise specified	394 (0.3)		<u>Prior FIT (&lt;5 years</u> prior)	n (%)					
No race information	8,363 (7.3)		1 FIT (test 1v ago	45 277 (30 5)		Majority were			
<u>Charlson Comorbidity Index score</u>			only) <sup>iv</sup>	43,-//(39-3)		regular			
0	44,297 (38.6)	K Fow	1 FIT – Age 76-80y	37,923 (33.1)		screeners			
1	20,859 (18.2)	comorbidities	1 FIT - Age 81-85y	7,354 (6.4)	*				
2	17,184 (15.0)		≥2 FIT	69,462 (60.5)					
3	7,899 (6.9)		≥2 FIT – Age 76-80y	69,299 (60.4)					
4	7,409 (6.5)		≥2 FIT – Age 81-85y	163 (0.1)					
≥5	7,702 (6.7)		FIT count (mean)	2.6					
Missing	9,148 (8.0)								



FIT (negative) + 1y

[Draft results. Manuscript in progress]

#### Cumulative CRC incidence (A) and CRC mortality (B)





- Cumulative CRC **incidence**:
  - 0.19% (95% CI:0.17-0.22) at 2y
    1.17% (95% CI:1.09-1.27) at 8y
- Cumulative CRC **mortality**:

0.02% (95% CI: 0.01-0.03) at 2y
0.28% (95% CI: 0.23-0.34) at 8y

## • **No evide** race

• Higher in

hnicity, or

**C causes** 5-2.04) at 2y -22.29) at 8y



- Cumulative CRC **incidence**:
  - 0.19% (95% CI:0.17-0.22) at 2y
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- Cumulative CRC **mortality**:
  - 0.02% (95% CI: 0.01-0.03) at 2y
    0.28% (95% CI: 0.23-0.34) at 8y
- No evidence of differences by patient characteristics: sex, comorbidity, ethnicity, or race
  - Higher incidence among 81-85y compared to 76-80y

**C causes** 5-2.04) at 2y -22.29) at 8y



- Cumulative CRC **incidence**:
  - 0.19% (95% CI:0.17-0.22) at 2y
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  - Higher incidence among 81-85y compared to 76-80y

#### Cumulative mortality from non-CRC causes

1.94% (95% CI: 1.85-2.04) at 2y
21.84% (95% CI: 21.39-22.29) at 8y



- Cumulative CRC **incidence**:
  - 0.19% (95% CI:0.17-0.22) at 2y
    1.17% (95% CI:1.09-1.27) at 8y
- Cumulative CRC mortality:
  0.02% (95% CI: 0.01-0.03) at 2y
  0.28% (95% CI: 0.23-0.34) at 8y



• **No evidence of differences by patient characteristics:** sex, comorbidity, ethnicity, or race

• Higher incidence among 81-85y compared to 76-80y

Cumulative mortality from non-CRC causes

1.94% (95% CI: 1.85-2.04) at 2y
21.84% (95% CI: 21.39-22.29) at 8y



## **Results summary**

• In both screen-eligible populations with prior negative tests (colonoscopy 10 years ago and FIT 1 year ago), patients were:

- >= 20 times more likely to die of a non-CRC cause than be diagnosed with CRC
  - × Cumulative risk of CRC in subsequent 8y: 1-2%
  - × Cumulative risk of CRC death in subsequent 8y: <0.5%
  - × Cumulative risk of death from non-CRC causes: 22-42%
- 160-200x times more likely to die of a non-CRC cause than CRC



## What this research adds

• Population-level risks of CRC incidence and mortality for patients expected to be at lower risk: screen-eligible patients with prior screening

- Accounts for death from other causes (and allows comparison)
- Quantified using high-quality, long-term patient-level data from the PRECISE cohort



## Limitations

- Limited representation of some racial groups
- Population-level estimates
- Screen-eligible older adults (not applicable to those with prior history of CRC or adenomas)



## Future research

- Impact of empirical risk estimates and treatment burdens on individuals' screening decisions
- Use of observational data to observe absolute effectiveness of screening
- Application to older adults with a history of adenoma or CRC (surveillance population)



## Thank you!

#### **Co-authors:**

- **o** Jessica Chubak
- Rebecca Ziebell
- o Aruna Kamineni
- Amanda Phipps
- Noel Weiss
- o Erica S. Breslau
- Douglas Corley
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- Theodore Levin
- o Joanne Schottinger

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- 3DCR training grant (T32CA009168)



Population-based Research to Optimize the Screening PRocess


### PROSPR Population-based Research to Optimize the Screening PRocess



Data through 2020



11 million fecal tests2.3 million colos222k flex sig36k colorectal cancers

#### 



*Colorectal Cancer Screening Research Center:* Optimizing Colorectal Cancer <u>PRE</u>cision and outcomes in <u>CommunIty-baSE</u>d populations (PRECISE)

#### Principal investigators:

Aruna Kamineni & Jessica Chubak Kaiser Permanente Washington Doug Corley Kaiser Permanente Northern California Joanne Schottinger Kaiser Permanente Southern California Celette Skinner & Ethan Halm University of Texas Southwestern/Parkland Health & Hospital System



## Thank You!



### Association Between Improved Colorectal Screening and Racial Disparities

Chyke Doubeni, MD, MPH (by video)



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#### Improving Screening Delivery and Racial Disparities in Rates of Colorectal Cancer Diagnosis and Death

Chyke A. Doubeni, MD, MPH

Professor of Family Medicine, College of Medicine Director of the Center for Health Equity Chief Health Equity Officer/AD, DEI for Comprehensive Cancer Center Wexner Medical Center at The Ohio State University, Columbus, OH





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## Thank You!





# Q&A











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