



# Colorectal Cancer Screening in Primary Care: Update on STOP CRC

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Group Health Research Institute



- <https://www.kpchr.org/stopcrc/public/stopcrcpublic.aspx?pageid=10&SiteID=1>



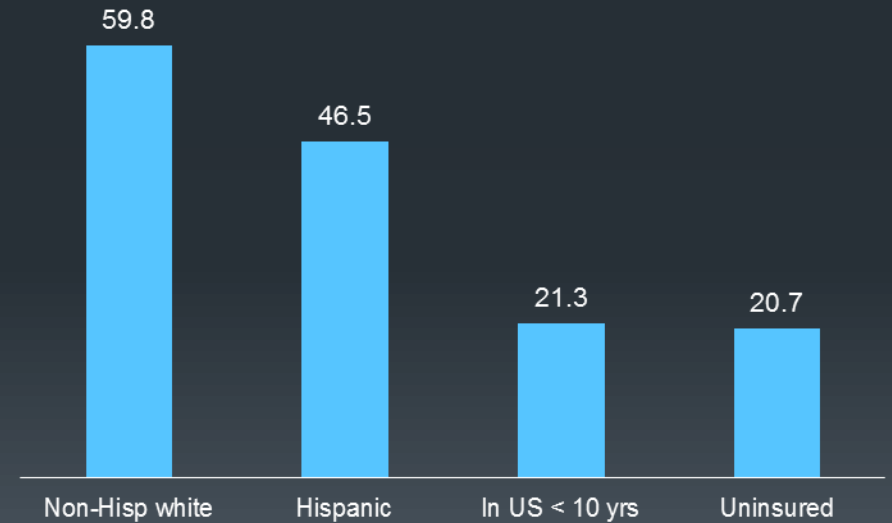
# Outline

- Colorectal cancer (CRC) screening background
- STOP CRC pilot study findings and lessons learned
- STOP CRC pragmatic study
- Successes and current challenges – you can help!

## Why colon cancer screening matters...

- Colon cancer is a leading cause of cancer death;
- Nearly 1/3 of age-eligible adults in the US are not up-to-date;
- Colon cancer can be prevented; survival is
  - 93% for Stage 1
  - 8% for Stage IV;
- Screening is effective, inexpensive, easy to do;
- Unscreened generally receive care at community clinics.

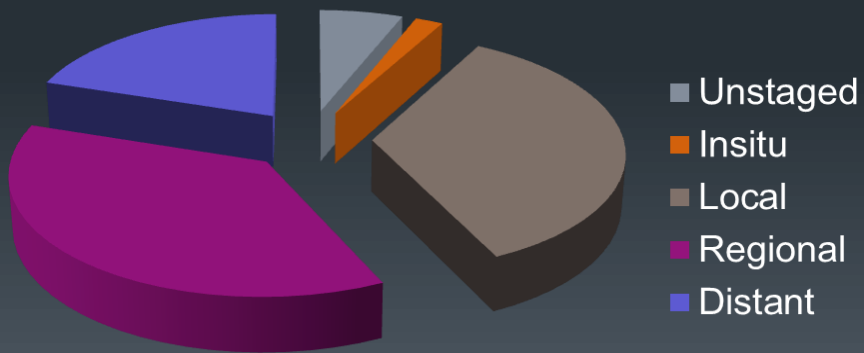
Percentage up-to-date with CRC screening



# Colorectal Cancer statistics for Oregon

## Stage of CRC detection\*

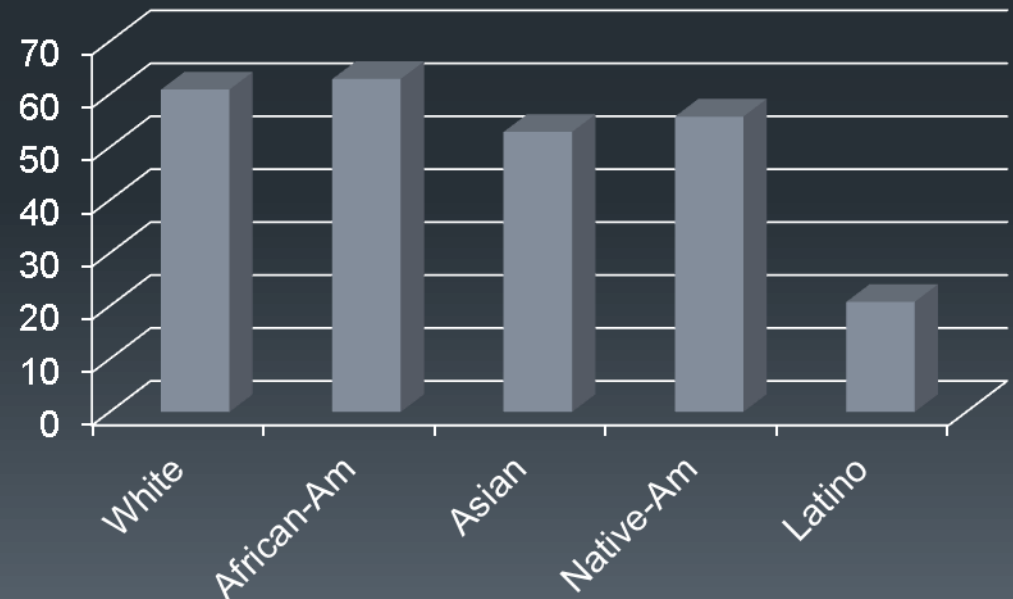
Colorectal cancer, stage at diagnosis, OR 2010



\*Source: Oregon State Cancer Registry

## CRC screening disparity\*

Colorectal cancer screening, OR 2010-11

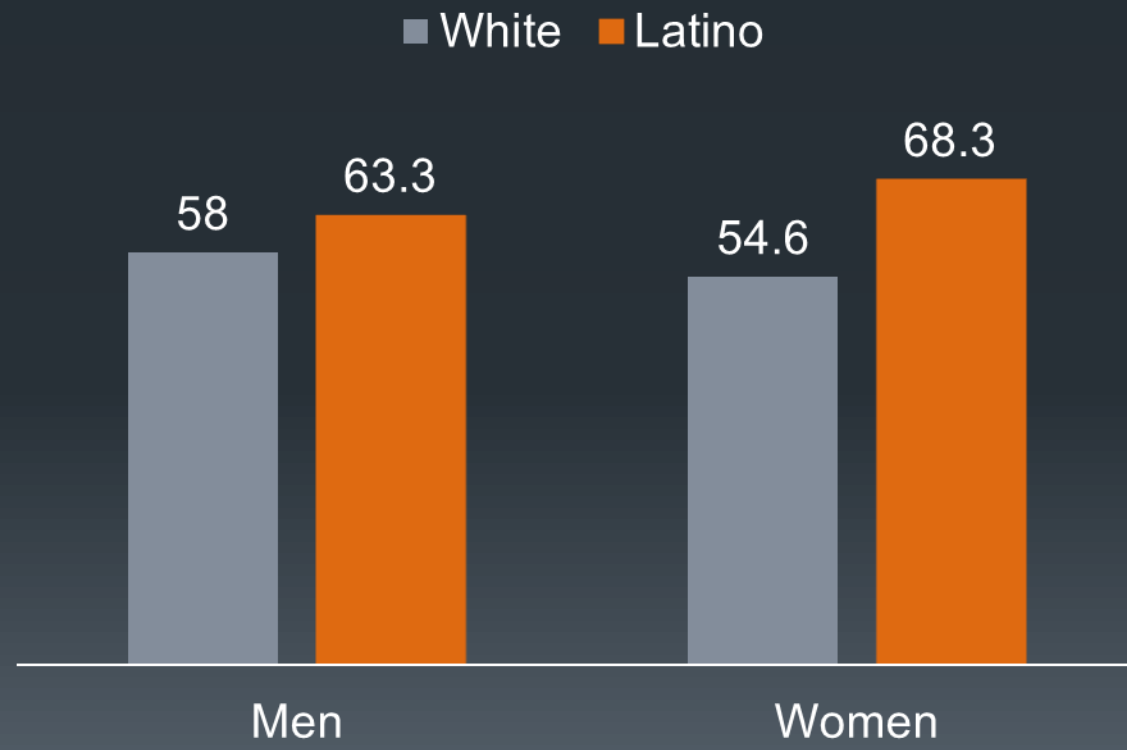


\*Source: Behavioral Risk Factor Surveillance Survey



## Stage of diagnosis disparity

### Proportion of CRC that are detected at late stages\*



\*Source: Oregon state cancer registry



# Colorectal cancer screening options

- Average-risk individuals aged 50 -75\*:
  - High-sensitivity fecal occult blood test (FOBT), including fecal immunochemical tests (FIT);
  - Colonoscopy every 10 years;
  - Sigmoidoscopy every 5 years plus interval FOBT/FIT.
- The Affordable Care Act (ACA) mandates that screening tests recommended by the USPSTF be covered with no out-of-pocket costs;

\*based on US Preventive Services Task Force Recommendations

## FIT as a viable option

- Patients prefer fecal testing over colonoscopy, in studies using data from a given year;
- Some geographic regions have limited colonoscopy capacity, fecal testing allows for ‘risk stratification’;
- “I will not get a colonoscopy unless I believe something is wrong”; fecal testing can motivate patients to get colonoscopy
  - Rates of first-line colonoscopy screening: ~ 40% (without reminders)
  - Rates of follow-up diagnostic colonoscopy: 60 - 90%





# Comparison between FOBT and FIT

- FOBT

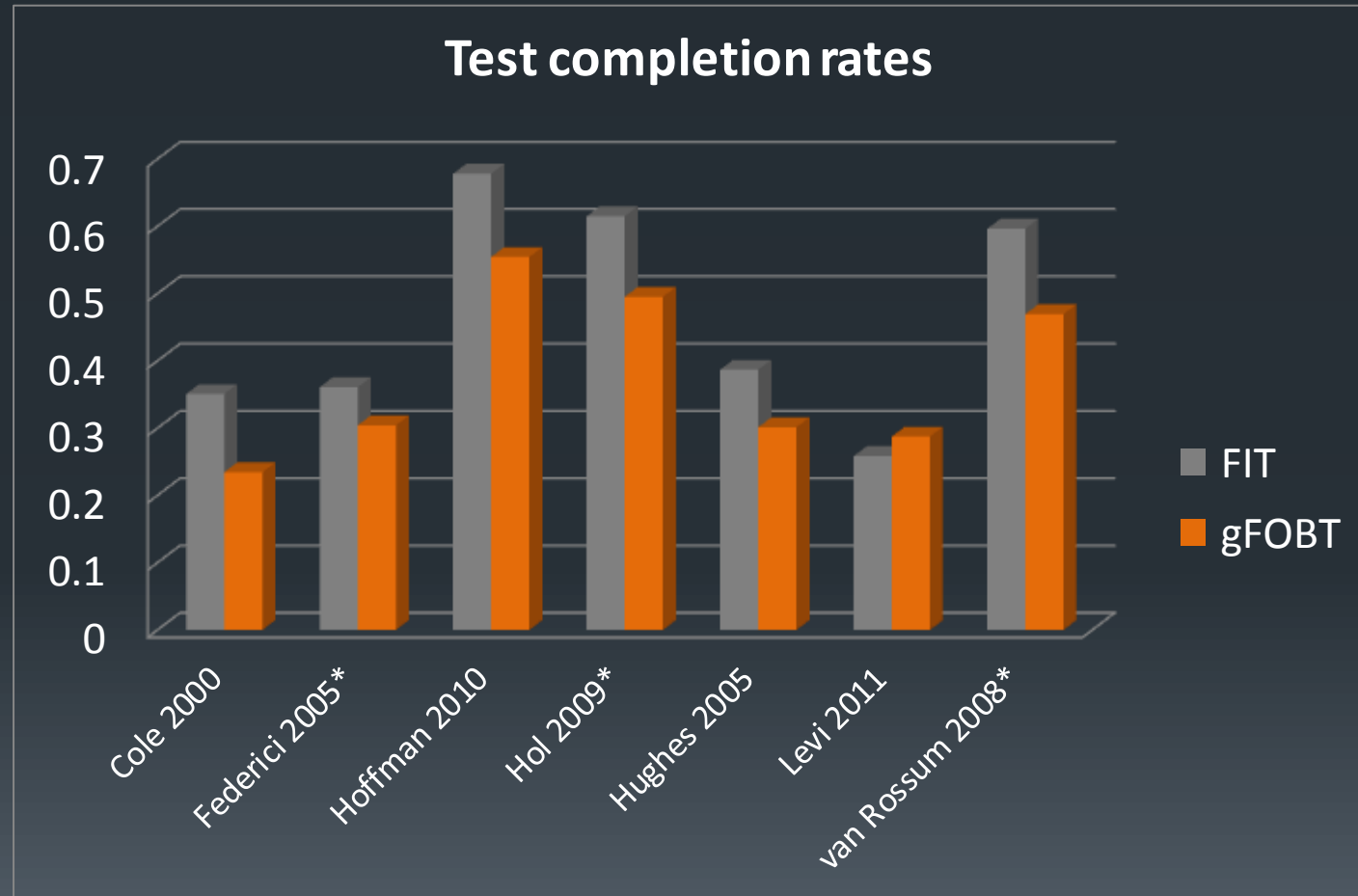
- 3-sample test
- Dietary and medication restrictions
- Tests for any type of blood in the stool
- Requires colonoscopy follow-up

- FIT

- 1- sample, 2-sample, or 3-sample test
- No dietary or medication restrictions
- Tests for human blood in the stool
- Requires colonoscopy follow-up

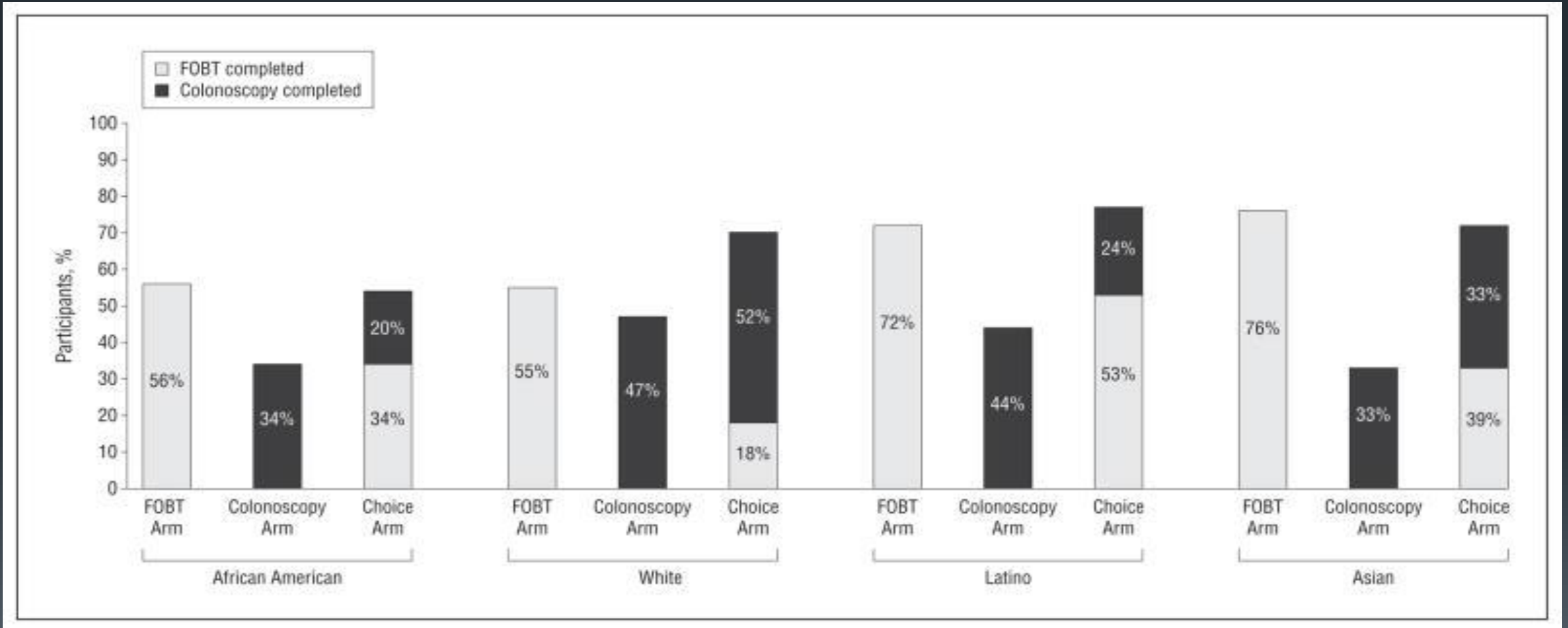
## CRC screening rates higher with FIT vs. FOBT

- A recent systematic review of randomized trials comparing adherence of FIT and gFOBT found 6 of 7 studies reported increased adherence with FIT versus gFOBT:
  - Adherence was **11.4-16.3 percentage points higher** in 6 studies
  - Adherence was **15.4-16.3 percentage points higher** in studies (n = 3) that compared a 1-sample FIT to 3-sample gFOBT



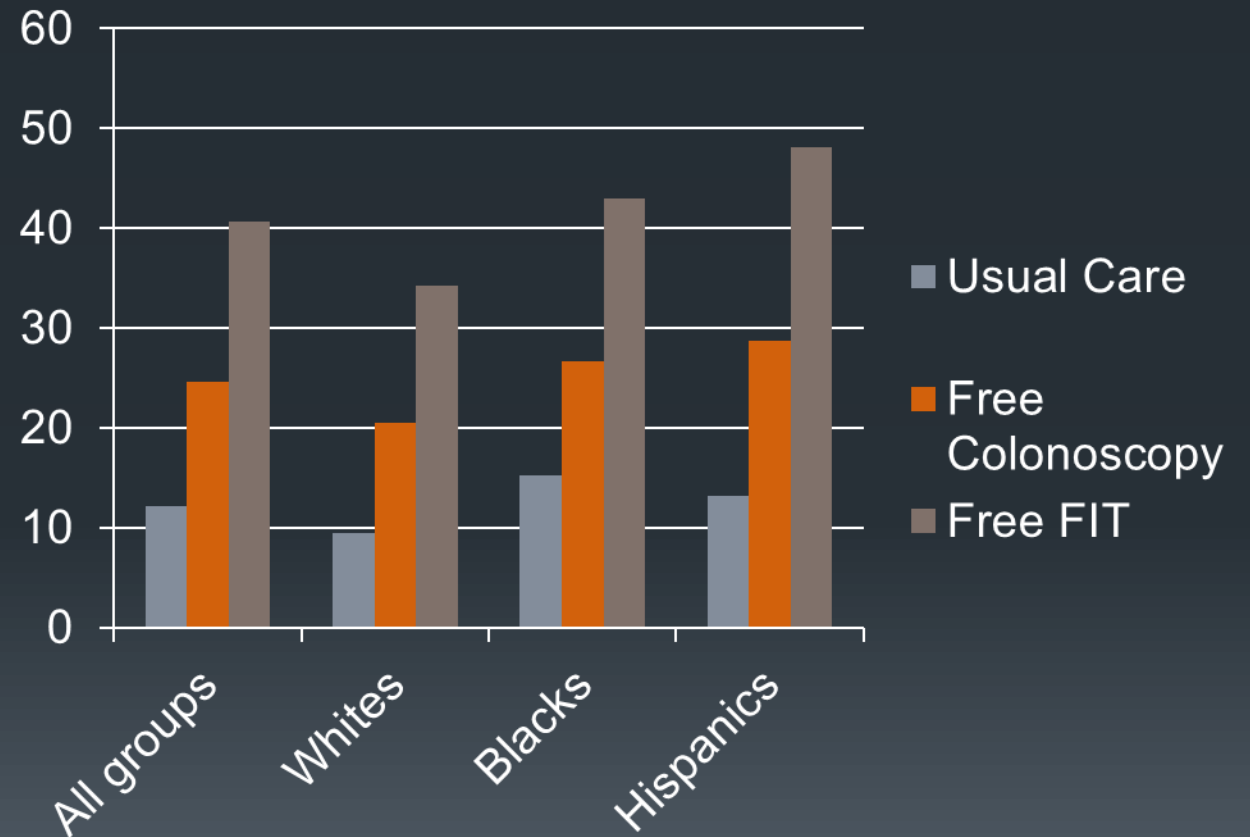
\* Studies that compared 1-sample FIT to 3-sample gFOBT

## CRC screening rates are highest if patients offered fecal testing or choice

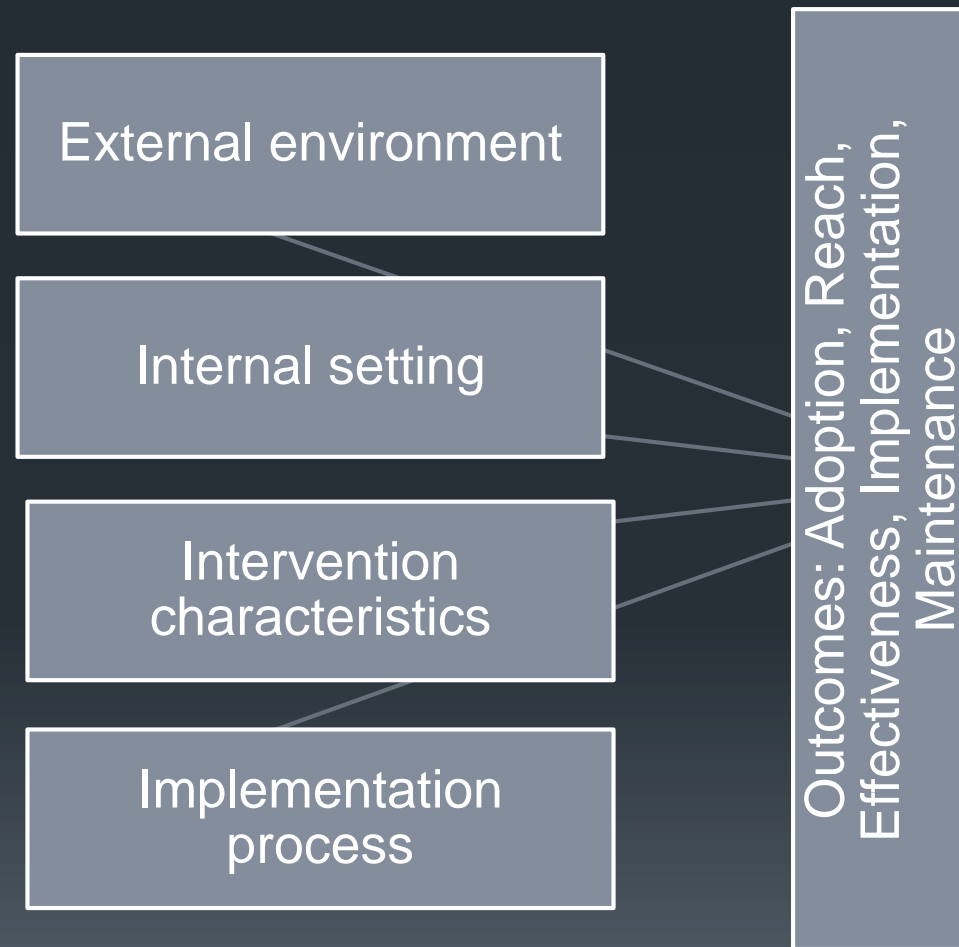


# Free FIT vs. Free colonoscopy program

- Study included uninsured patients aged 54-64 at the John Peter Smith Health Network, a safety net health system.
- Randomized patients into 3 groups:
  - Free FIT (n = 1593)
  - Free colonoscopy (n = 479)
  - Usual care (n = 3898)



## Multi-level Framework





## External environment

- Medicaid expansion
- Incentives and rewards for CRC screening
- CRC screening coverage
- Colonoscopy capacity

# Health Policy to Promote Colorectal Cancer Screening: Improving Access and Aligning Federal and State Incentives

Coronado GD, Petrik AF, Coury J, Taplin SH, Bartelmann S, Coyner L.  
Clinical Researcher 2014 (in press)

## Oregon Medicaid Enrollment, before and after Medicaid Expansion

	Before Medicaid Expansion	After Medicaid Expansion	Change
	Dec-13	Jun-14	
	N	N	%
All ages	659,114	971,095	47.3%
< 19	372,639	426,130	14.4%
19 – 21	20,996	41,625	98.3%
22 – 35	90,356	193,078	113.7%
36 – 50	70,203	147,184	109.7%
51 – 64	57,295	124,418	117.2%
65 +	47,625	38,660	-18.8%



# CRC screening become incentivized in Oregon

“The state [OR] has also developed 33 performance measures to aim to show to the public and the federal government how the project is working, with financial incentives to local Coordinated Care Organizations for meeting goals like rates of adolescent well-care visits and colorectal cancer screening.”

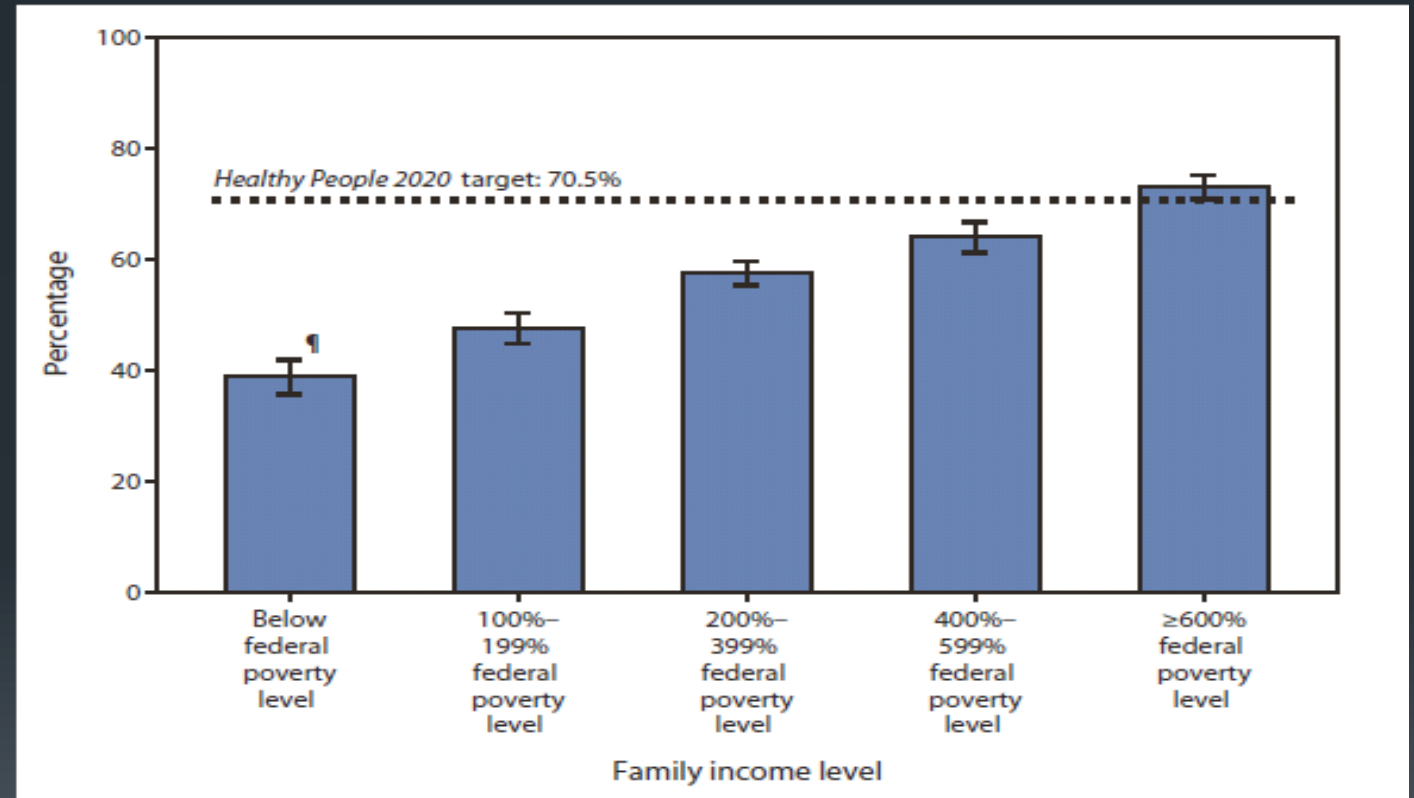
*Experiment in Oregon Gives Medicaid Very Local Roots, New York Times April 12, 2013*



# Navigating the Murky Waters of Colorectal Cancer Screening and Health Reform

Green BB, Coronado GD, Devoe JE, Allison J  
American Journal of Public Health. April 2014

- ACA prevention mandates are meant to increase screening, current policies could increase disparities;
- ACA mandate only applies to the initial screening test. FOBT screening is a 2-part test, positive tests need a follow-up diagnostic colonoscopy;
- Follow-up diagnostic colonoscopy may be unaffordable for some (e.g. Medicare basic, high deductible plans).



## BeneFITs to Increase Colorectal Cancer Screening in Priority Populations

Green BB, Coronado GD.

JAMA Internal Medicine, June 2014

- An invited commentary in response to a trial by Baker et al., a mailed FIT program achieved repeat screening rates >82% in a low-income Hispanic population.
- Only 60% of those with a positive test had a follow-up colonoscopy.
- More work is needed to assure equity and to increase diagnostic follow-up after a positive FIT screening test (e.g. Medicare basic, high deductible commercial plans).



# Internal setting

- Types of tests that are recommended and used
- Provider attitudes and beliefs about CRC screening and tests
- In-clinic systems to promote CRC screening
- Use of EMR
- Prioritization of CRC screening
- Readiness and adaptability to change



STOP CRC Pilot

# STOP CRC Update: Pilot Clinic partnership

- Founded in 1975
- Provides over 132,000 office visits to 34,000+ patients per year in Washington and Yamhill Counties
- Operates 4 primary care clinics, 3 dental offices, and 2 school-based health centers.

## Virginia Garcia Memorial Health Center

Clinic	N Patients aged 50-74	% Hispanic aged 50-74	% aged 50-74 who obtained FIT or FOBT
#1	898	73	3.7
#2	1562	52	3.9
#3	1495	31	5.2
#4	1235	38	7.6



# Strategies and Opportunities to STOP Colon Cancer in Priority Populations: STOP CRC Pragmatic Pilot Study Design and Outcomes

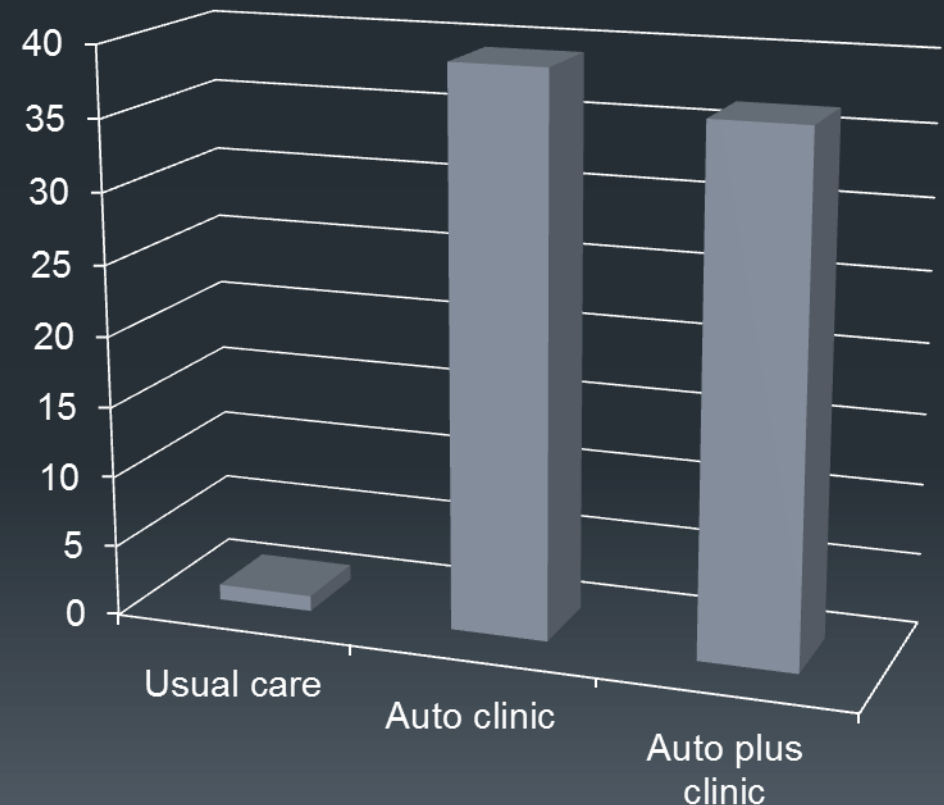
Coronado, GD, Vollmer VM, Petrik AF, Aguirre J, Kapka T, DeVoe JE, Taplin SH, Puro J, Miers T, Lembach J, Turner A, Sanchez J, Nelson C, Green BB.  
 BMC Cancer 2014

STOP CRC Intervention Activities and Outcomes

	<i>Auto Intervention</i>	<i>Auto Plus Intervention</i>
Letters mailed	112	101
FIT kits mailed	109	97
Reminder postcards mailed	95	84
Reminder call delivered	NA	30*
<b>FIT kits complete</b>	<b>44 (39.3%)**</b>	<b>37 (36.6%)**</b>
<b>Positive FIT result</b>	<b>5 (12.5%)</b>	<b>2 (5.7%)</b>

\*34 patients were not reached after 2 attempts  
 \*\* FIT completion of 24% was expected

Fecal test completion rates\*



\*Auto and Auto Plus as percentage of patients mailed a FIT kit.



## Follow-up to abnormal FITs

Uninsured patient (n = 2) were offered free f/u colonoscopy through a community-based organization, Project Access Now

Patient	Colonoscopy receipt	Colonoscopy result/comment
1	N	Patient declined
2	Y	Hyperplastic polyps; not precancerous
3	Y	Polyp -- 5mm
4	Y	Abnormal appearing rectal tissue; no masses
5	Y	36 polyps; some tubular adenomas; up to 3 cm
6	Y	Polyp --5mm
7	Y	Hemorrhoids

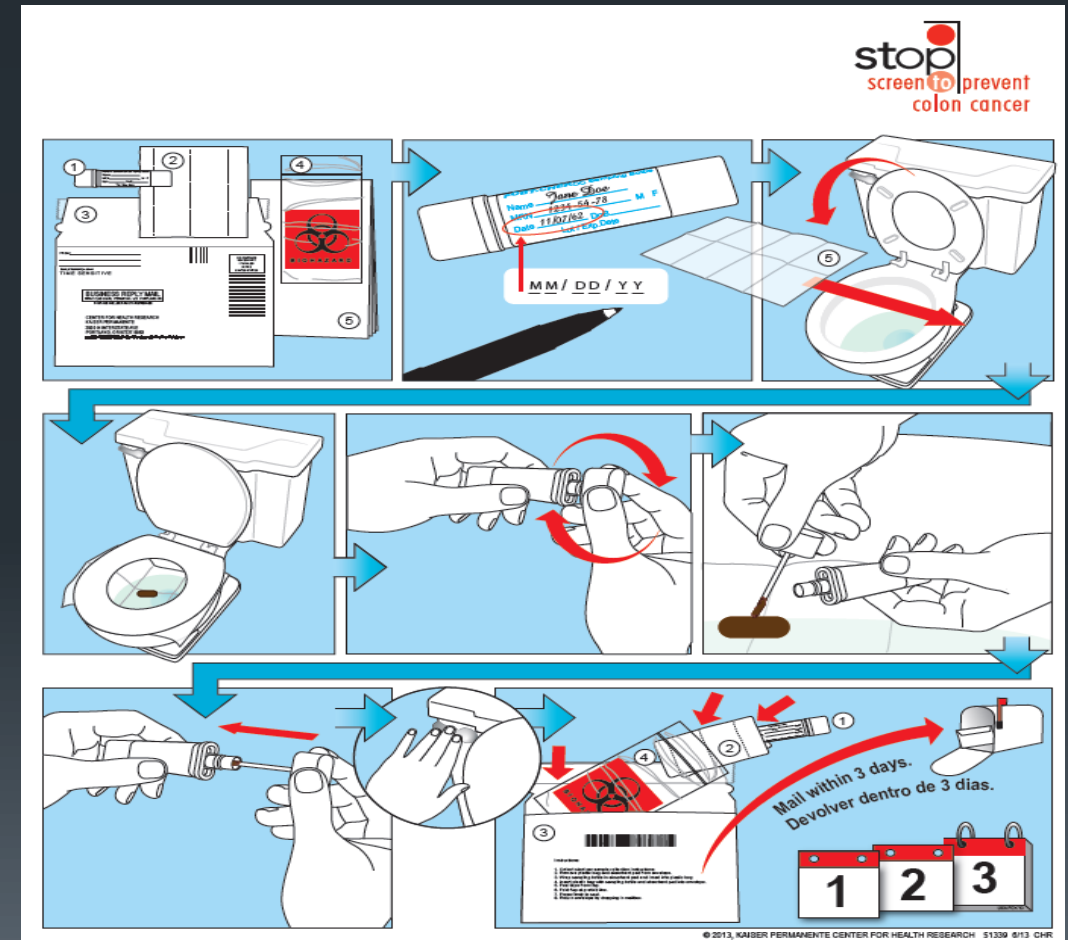
# Advantages of Wordless Instructions on How to Complete a Fecal Immunochemical Test: Lessons from Patient Advisory Council Members of a Federally Qualified Health Center

Coronado GD, Sanchez J, Petrik A, Kapka T, DeVoe JE, Green BB.  
J Cancer Educ 2014

## Patient-centered approaches

Developed with input from:

- Patient advisory council members
- Clinic staff
- STOP CRC advisory board





# Instructions for Insure

Developed by graphic artists at Multnomah County Health Department, with input from patients and clinic staff

1

2 Poop One Poop Una  
Первый образец кала 大便一

3

4

5 seconds segundos секунд 秒鐘

5 seconds segundos секунд 秒鐘

5

6

7

8

9 Poop Two Poop Dos  
Второй образец кала 大便二

10

5 seconds segundos секунд 秒鐘

11

12

13


















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Funding provided by the National Institutes of Health (Award # 4U49CA188640-02).  
Created by Olga Lukomsky and Breana Bard

# Reasons for non-response to a direct-mailed FIT kit program: Lessons learned from a pragmatic colorectal-cancer screening study in a Federally Sponsored Health Center

Coronado GD, Schneider JL, Sanchez JJ, Petrik AF, Green BB.

Translational Behavioral Medicine 2014

Table 4: Patient-reported Reasons for FIT Kit Non-completion (n=20)

English Language Speakers			Spanish Language Speakers	
2		Fear of results, cost, or follow-up		7
1		Did not receive FIT kit		6
6		Concern about mailing fecal matter	0	
4		Busy / forgetful	0	
2		Other health conditions		2
3		Provider encouraged colonoscopy	0	
2		Prefer conversation with provider		1
0		Living out of country / traveling		2
2		Not as good as colonoscopy	0	
2		Unemployed / financial	0	
1		Unnecessary / waste of resources	0	
0		Confusion about why receiving FIT kit		1
0		Unsure if FIT kit is free		1



# STOP CRC Pragmatic Study

## STOP CRC intervention

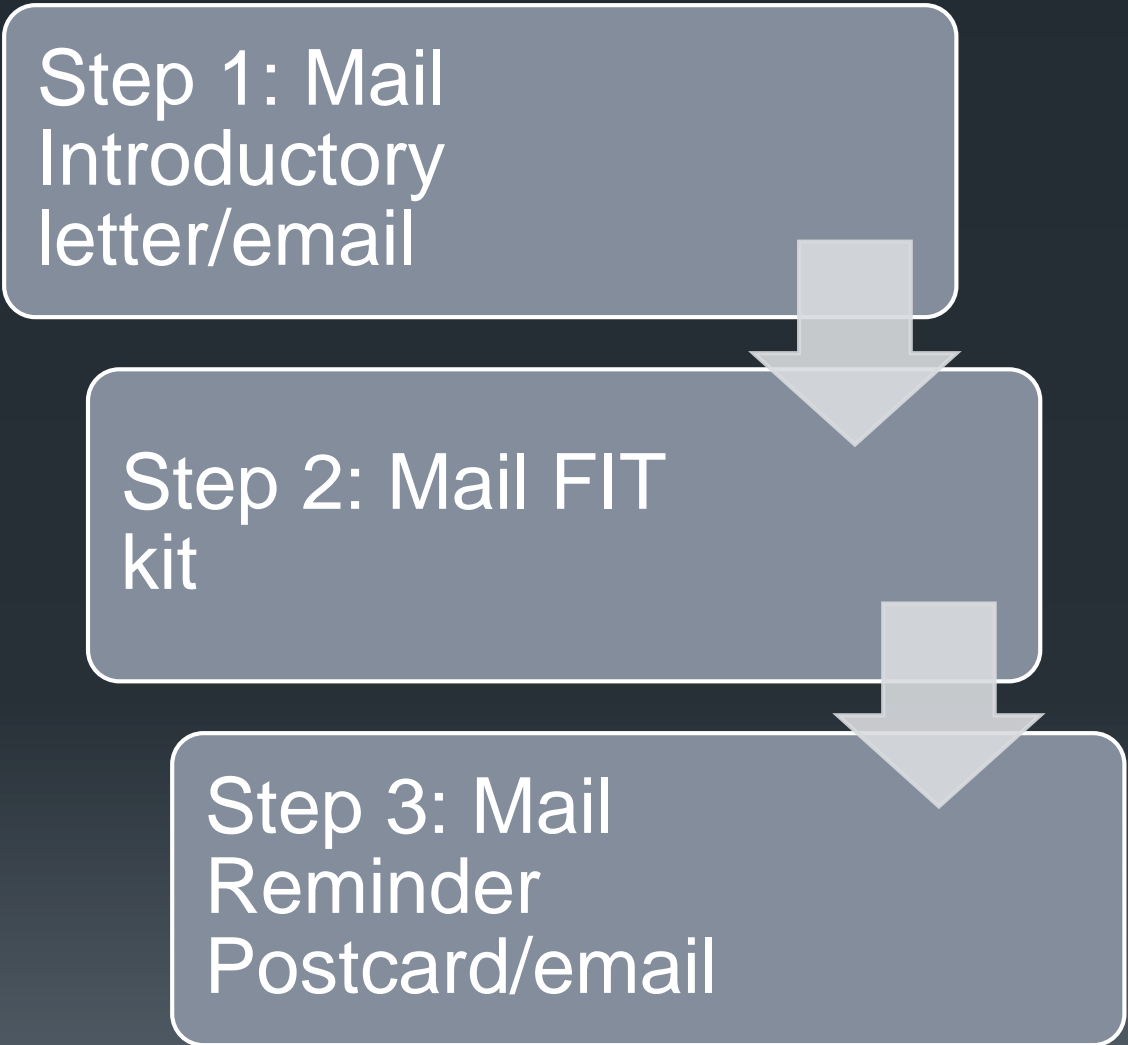
EMR tools in Reporting Workbench, driven by Health Maintenance;

Step-wise exclusions for:

- Invalid address
- Self-reported prior screening
- Completion of CRC screening

Improvement cycle (e.g. Plan-Do-Study-Act)

Step 1: Mail  
Introductory  
letter/email



```
graph TD; A[Step 1: Mail Introductory letter/email] --> B[Step 2: Mail FIT kit]; B --> C[Step 3: Mail Reminder Postcard/email];
```

Step 2: Mail FIT  
kit

Step 3: Mail  
Reminder  
Postcard/email

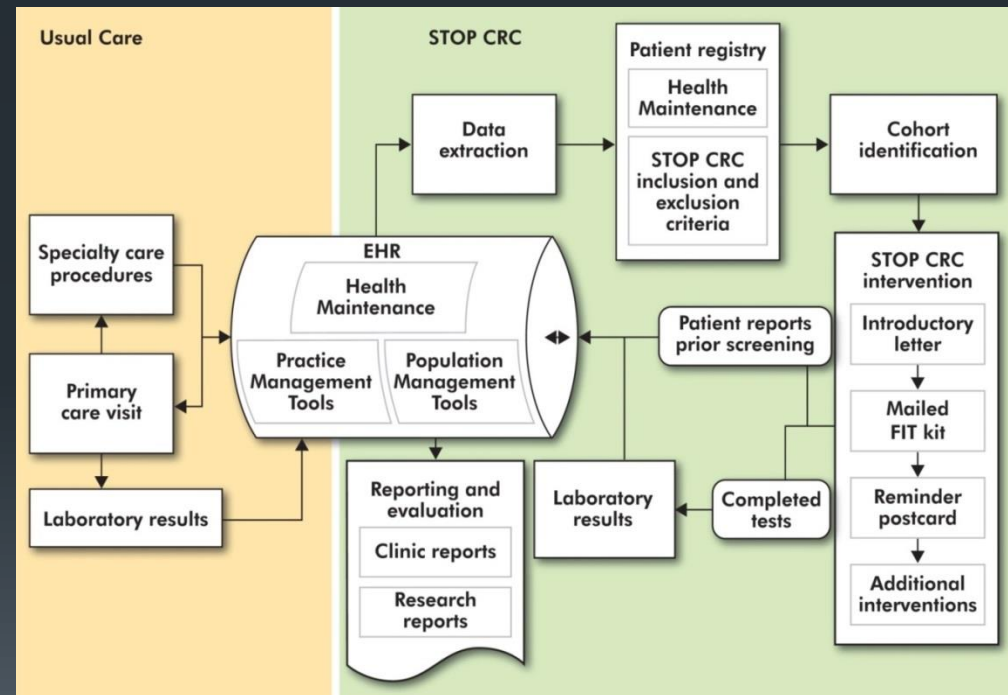
# Using an automated data-driven, EHR-embedded program for mailing FIT kits: Lessons from the STOP CRC pilot study

Coronado GD, Burdick T, Petrik AF, Kapka T, Retecki S, Green BB.  
J Gen Pract 2014

## Original thinking



## Revised thinking

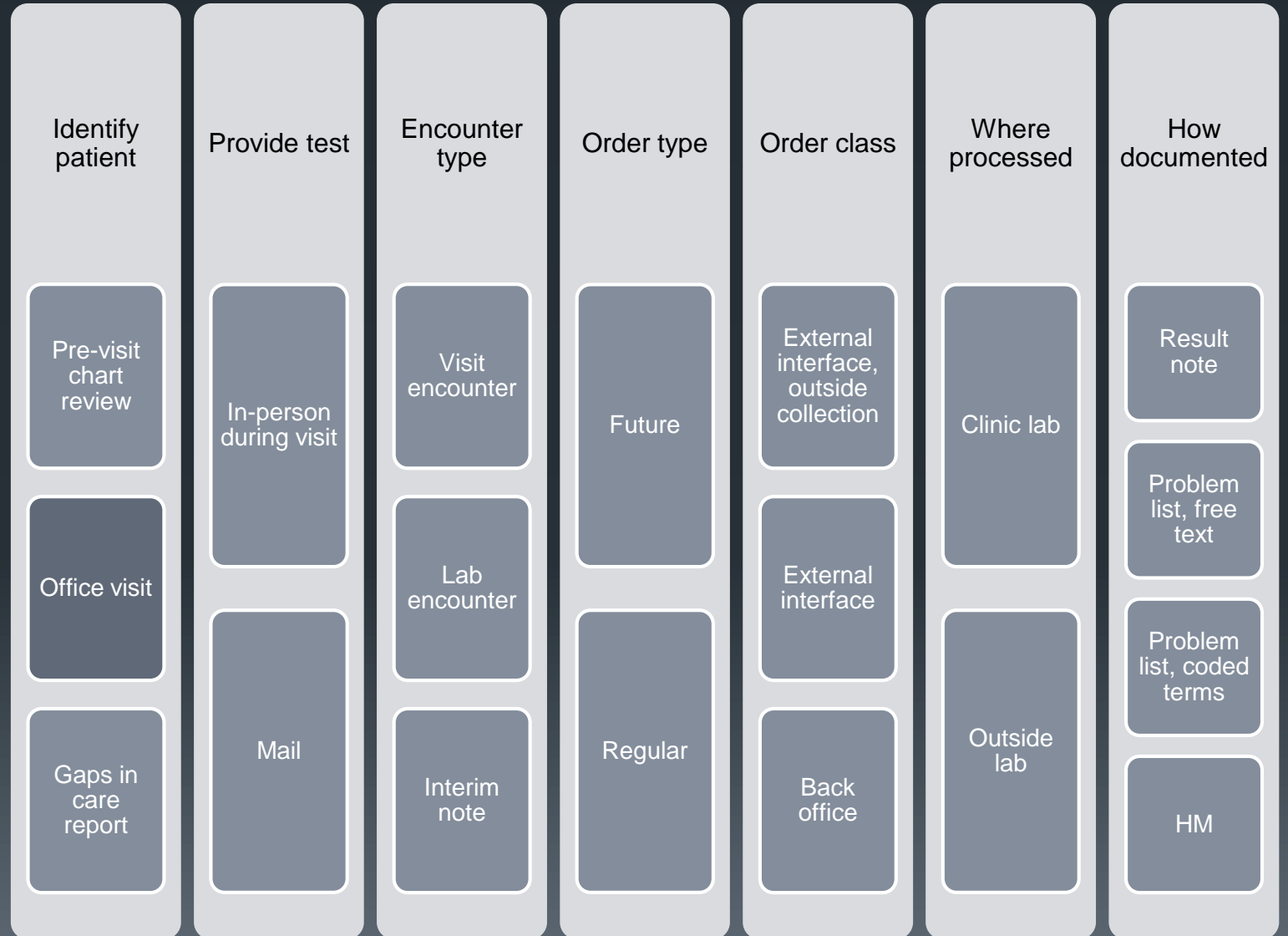


# Mapping Clinic Workflows: A Novel Method for Multi-site Research in Learning Health Systems

Coronado GD, Retecki S, Petrik AF, Coury J, Aguirre J, Taplin SH, Burdick T, Green BB.  
JAMIA 2014 (submitted)

## Clinic workflows

Understanding variations in fecal testing by clinic





## Value of workflows

- Assure that EMR tools function as intended across health centers;
- Customize training;
- Predict unintended consequences;
- Promote standardized practices to improve data quality.

## Participating clinics\*

- Open Door Community Health Centers (4)
- Multnomah County Health Department (6)
- La Clinica del Valle (3)
- Mosaic Medical (4)
- Virginia Garcia Memorial Health Center (2)
- Community Health Center (CHC) Medford (3)
- Benton County Health Department (2)
- Oregon Health & Science University (OHSU) (2)

\*Overall: colonoscopy screening in past 10 years: 5%;  
fecal testing in past year: 7.5%





# Types of FIT kits used

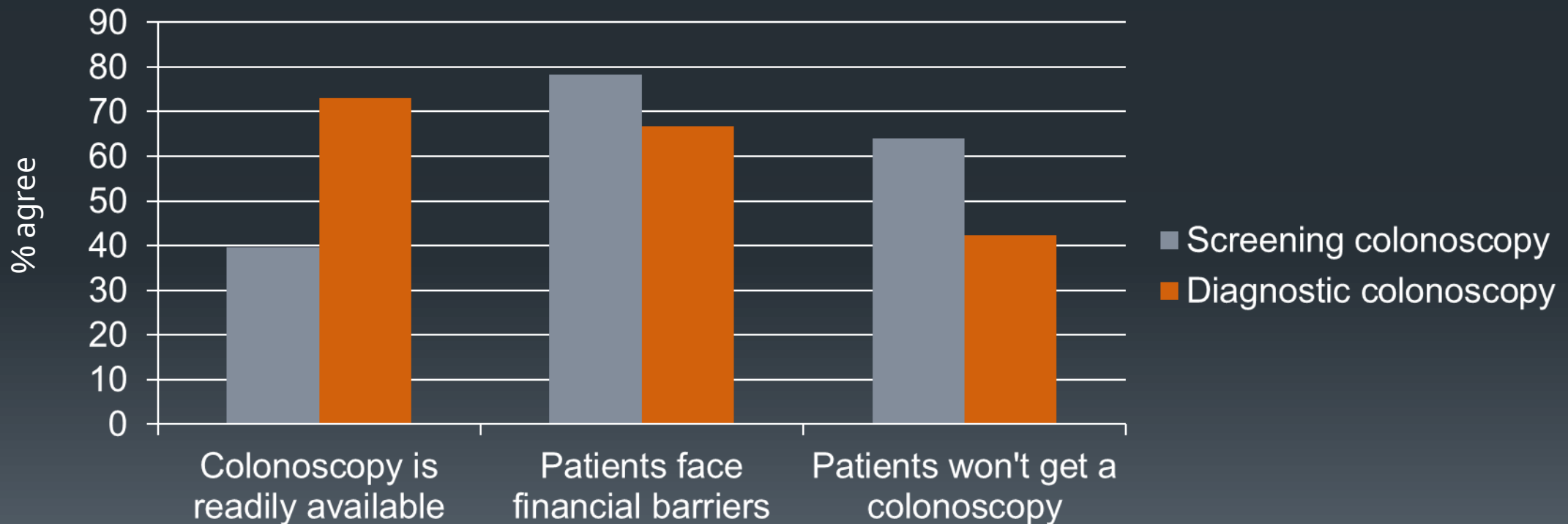
Health Center	FIT kit brand	N samples	Where processed?
1	Consult Diagnostics	1-sample	Local hospital
2	Hemosure	1-sample	Local hospital
3	OC-Micro	1-sample	Outside lab
4	Insure	2-samples	Outside lab
5	Insure	2-samples	On-site
6	Insure	2-samples	Outside lab
7	OC-Micro	1-sample	Outside lab
8	OC-Micro	1-sample	Outside lab



# Organizational assessment

- Organizational survey (1 per health center)
- Leadership interviews (qualitative; 4 – 7 per health center)
- Provider interviews (quantitative; all family and internal medicine providers who serve adults)
  - Short survey addressed: Provider attitudes; clinic practices related to CRC screening; Use of EMR for CRC reporting and patient identification
  - On-line platform (Survey Monkey)
  - Web link distributed to qualifying providers at all sites
- To-date 112 provider surveys have been completed (60% response rate); finding based on first 78.

# Provider perceptions of colonoscopy access\*



\*based on 78 completed surveys



Biggest challenges

# EMR tools use real-time data



- New patients;
  - Patients with a recent clinic visit;
  - Patients newly eligible for CRC screening (because of age or screening hx)
- 
- Patients with no recent clinic visit;
  - Patients newly ineligible for CRC screening (because of age, screening hx, or co-morbidities)

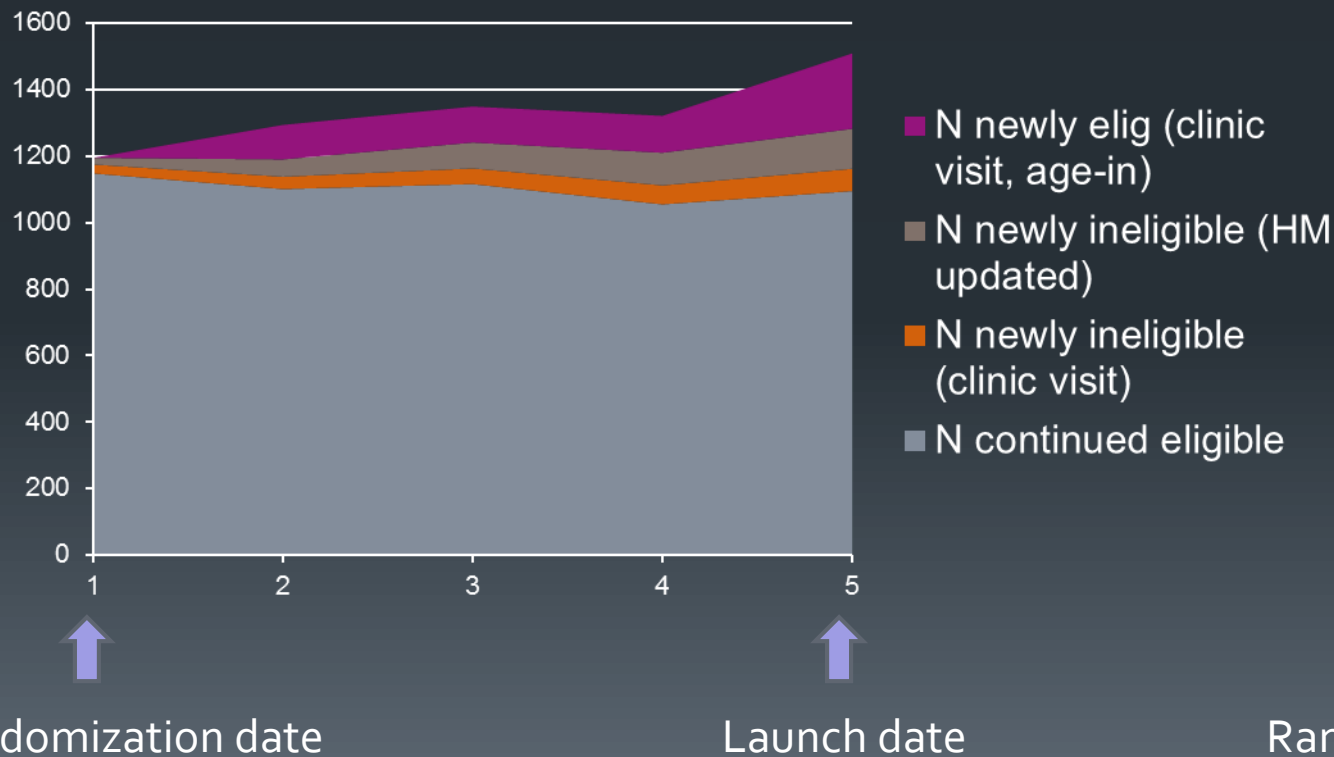


# Analytic plan

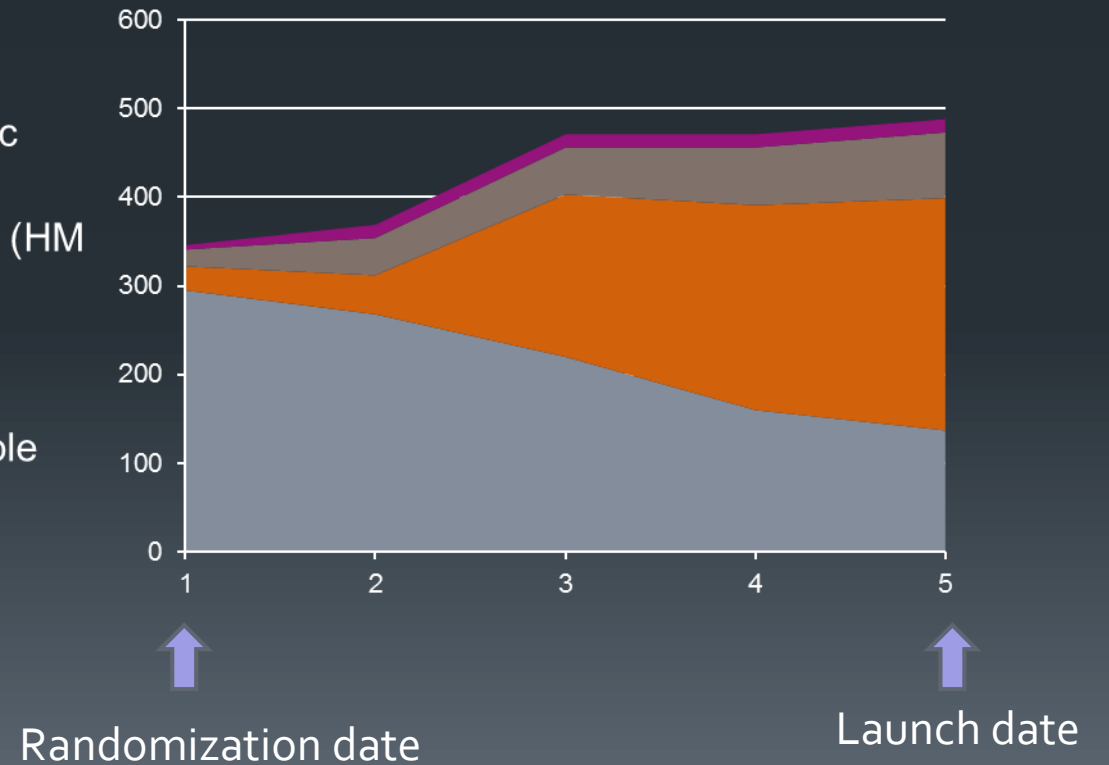
- Primary outcomes
  - Rate of fecal testing 12 months after identified as eligible
- Secondary outcomes
  - Any CRC screening 12 months after intervention
  - CRC HEDIS score
  - Reach
  - Adoption (in YR01 among intervention sites, and in YR02 among usual care sites)
  - Implementation (by intervention component)
  - Maintenance (patient-level and clinic-level)
  - Rate of diagnostic follow-up

# Impact of changes in clinic volumes

## Maintenance of clinic volumes



## Drop in clinic volumes





## Other challenges

- Gastroenterology capacity
  - Anecdotally, in some geographic regions, wait-time for colonoscopy can be as long as 8 months;
  - We plan to assess this at the end of the study using EMR data;
- Updating EMR with historical colonoscopy
  - Receive procedure report without pathology report;
  - No interval to next screening.





## Unintended (positive) consequences

- All health centers are using FIT, only 1 was using FIT before the study;
- EMR capture of CRC screening has improved;
- Clinic staff are now using Health Maintenance for CRC screening and other preventive health screenings.



# Summary

- Rates of colorectal cancer screening are low and particularly low for Latinos;
- Screening (home-based fecal testing) is highly effective, inexpensive, and easy to deliver, and patients prefer fecal testing;
- How rates of colorectal cancer screening are raised is transformative
  - Home-based testing can allow for risk stratification without clinic visit;
- Successful, cost-saving programs can be implemented;
- STOP CRC can provide evidence to support
  - broad adoption of direct-mail program;
  - long-term sustainability;
  - improvements in program efficiency (i.e. PDSA cycles);
  - information about cost; and
  - data to drive policy changes.



# Acknowledgments

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