

**Effectiveness [and Implementation]
of a Pragmatic Direct-Mail
Colorectal Cancer Screening
Program in Safety Net Clinics**



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Research Team

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Key Points

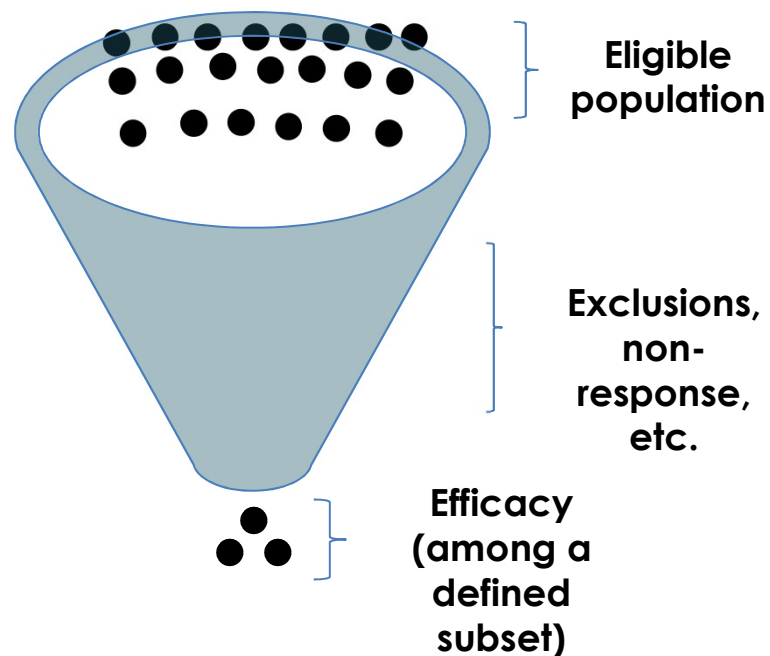
- How effective is a direct-mail fecal testing program when implemented in busy community clinic practices as part of standard care?
- To report the effectiveness and level of implementation of an electronic health record (EHR)– embedded program to directly mail fecal tests to patients due for colorectal cancer screening.

Background

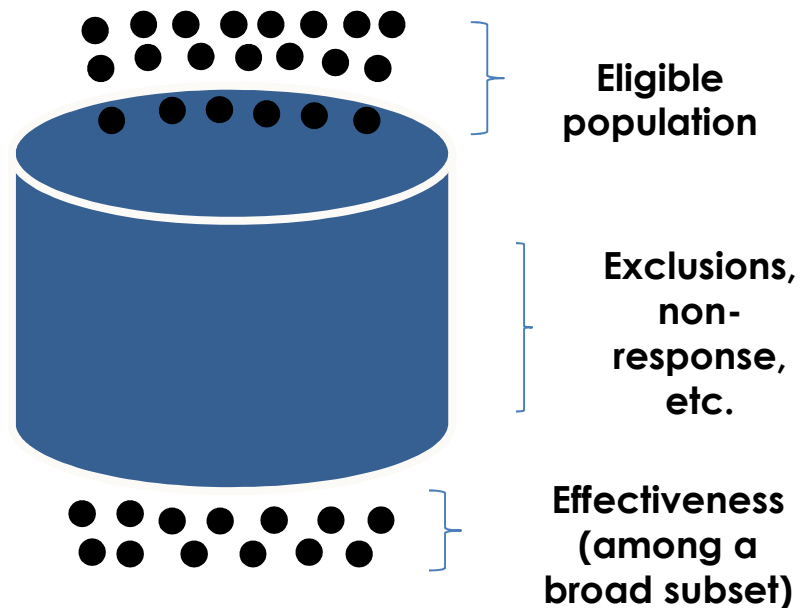
- The US Preventive Services Task Force recommends routine colorectal cancer screening for individuals aged 50 – 75.
- Programs that directly mail fecal tests to patients' homes have been shown to improve rates of colorectal cancer screening in various clinical settings.
- Little is known about the effectiveness of such programs when implemented in community health centers as part of standard care.

Explanatory study vs. pragmatic study

Explanatory Study



Pragmatic Study



Design, Setting, Participants

- Pragmatic clinical study
 - Eligibility, 50-75, screening appropriate
- 8 federally qualified health centers
 - 26 clinics (13 clinics randomized to 2 arms)
 - 41,000 patients
- Year 01 intervention interval: February 4, 2014 – February 3, 2015
- Year 01 evaluation interval: February 4, 2014 -- August 3, 2015

STOP CRC intervention

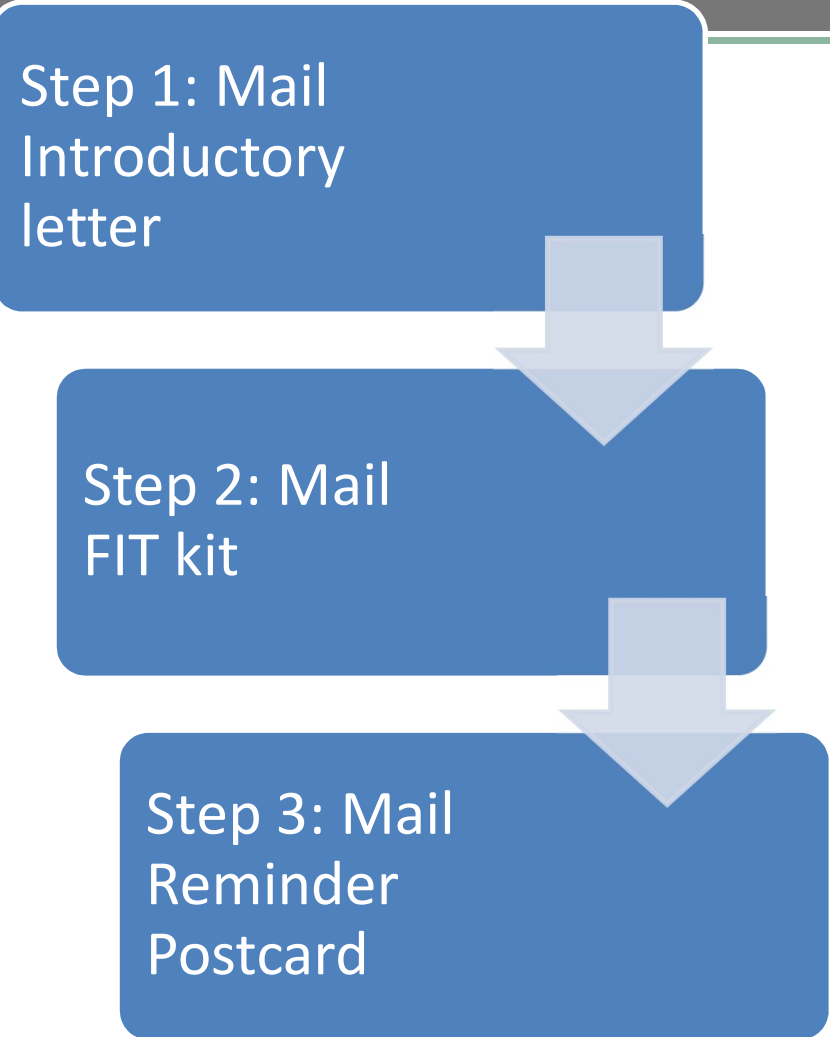
EMR tools in Reporting Workbench,
driven by Health Maintenance;

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



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

Step 3: Mail
Reminder
Postcard

Main outcomes and measures

- **Effectiveness:** Clinic-level - proportions of adults eligible for colorectal cancer screening during the intervention interval who completed fecal testing, and secondarily any CRC screening;
- **Implementation:** Clinic-level - proportions of eligible adults who were mailed a fecal test as part of the program

Baseline clinic-level characteristics of eligible adults in analysis sample (n = 41,193)

	Intervention clinics		Usual care clinics	
	(n = 13)		(n = 13)	
	Median clinic % ^a	(range)	Median clinic % ^a	(range)
Age (50-64)	80	(73-85)	83	(72-88)
Gender (Female)	44	(38-56)	45	(35-51)
Ethnicity (% Hispanic)	8	(1-33)	15	(2-36)
Language				
English	90	(41-99)	86	(53-99)
Spanish	4	(0-26)	12	(1-31)
Other	0	(0-48)	1	(0-18)
Insurance status				
Medicaid	36	(20-51)	35	(25-54)
Medicare	24	(20-37)	23	(15-36)
Uninsured	26	(3-40)	27	(2-38)
Commercial	10	(1-49)	11	(1-39)
Federal poverty level				
<100%	47	(13-61)	45	(19-64)
100-150%	19	(6-31)	18	(14-24)
151 - 200%	9	(2-14)	9	(5-13)
201+	10	(3-26)	10	(2-36)
Unknown	17	(3-76)	21	(1-36)

Colorectal cancer screening completion, by intervention and usual care arm

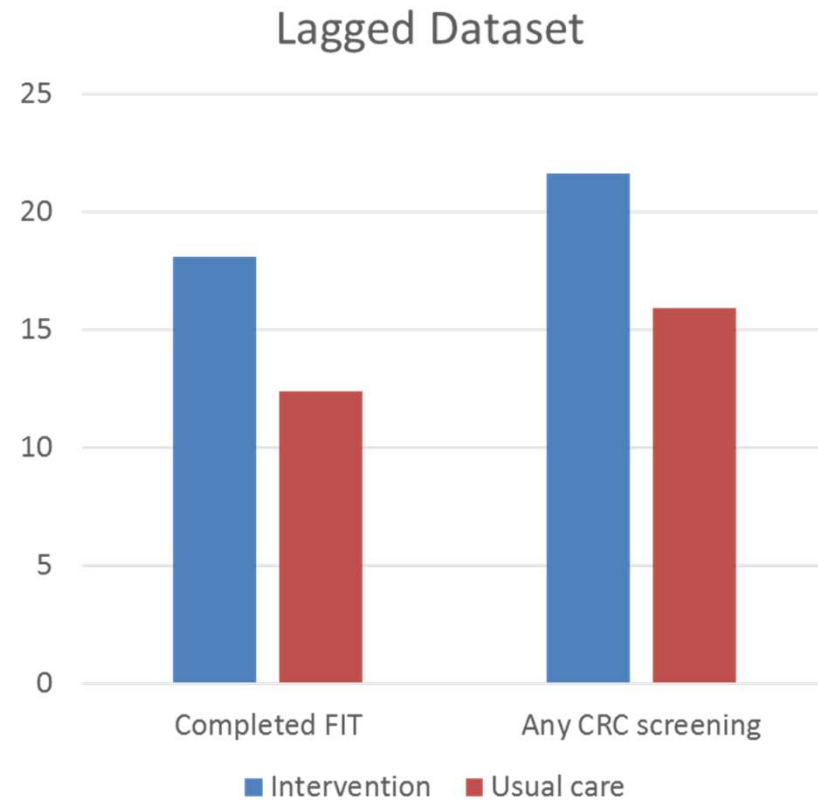
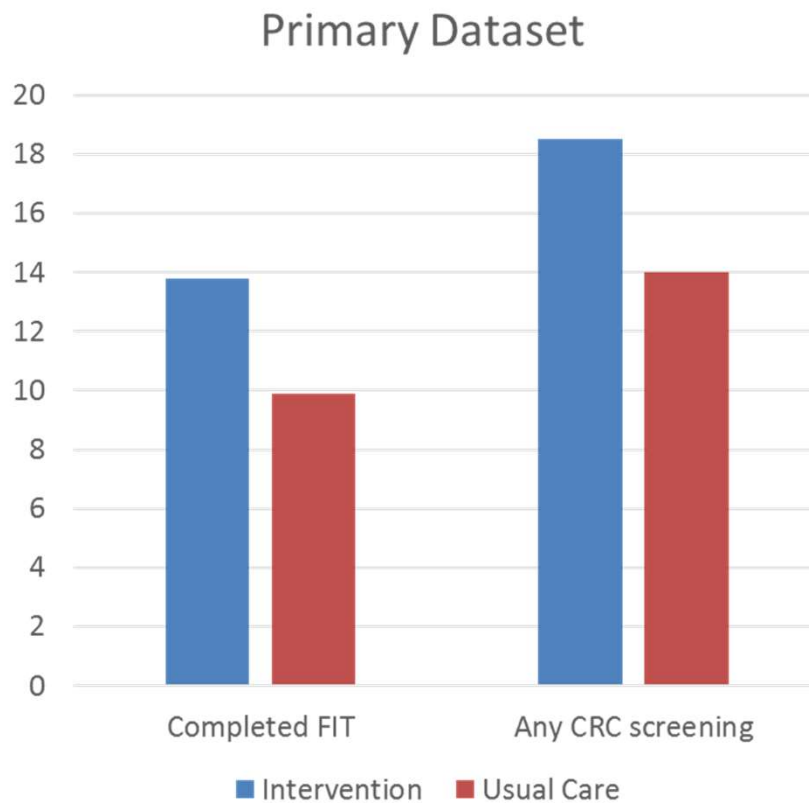
	Intervention	Usual Care	Difference		p value ^a
			Mean, %	95% CI	
Primary dataset					
No. eligible	21,134	20,059			
Returned FIT, % ^b	13.8	9.9	3.8	(-0.8, 8.5)	0.105
Completed any CRC screening, % (EHR data) ^b	18.5	14.0	4.5	(0.1, 8.9)	0.046
Lagged dataset ^c					
No. eligible	15,763	14,904			
Returned FIT, % ^b	18.1	12.4	5.6	(0.8, 10.4)	0.026
Completed any CRC screening, % (EHR data) ^b	21.6	15.9	5.8	(1.4, 10.1)	0.014

^a 2-sided significance level based on generalized estimating equation (GEE) models and use observed distribution of health centers, gender, and mean age (59) for full cohort

^b probabilities and differences based on same GEE models

^c delays participant accrual for four months

Colorectal cancer screening completion, by intervention and usual care arm



PRIMARY DATASET

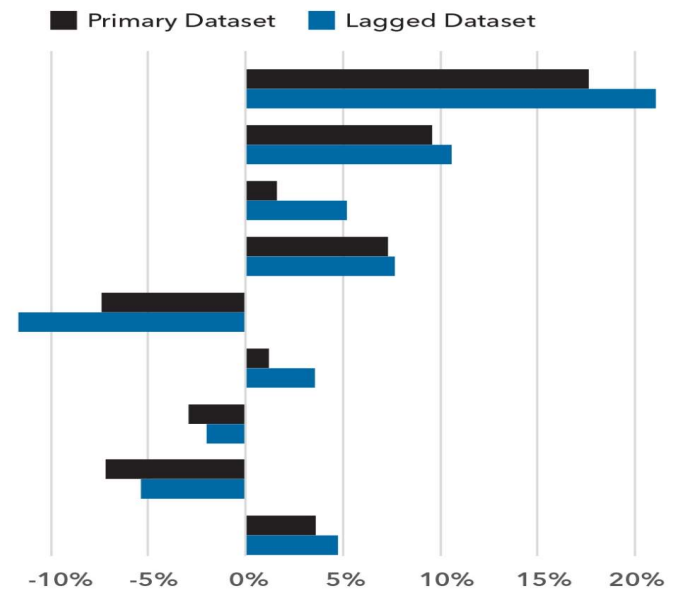
HEALTH CENTERS	MAILED FIT %	— % Adults who completed FIT —		
		INTERVENTION %	USUAL CARE %	ABSOLUTE DIFFERENCE %
HC1	68.2	20.3	2.7	17.6
HC2	48.4	21.3	11.7	9.6
HC3	38.6	22.9	21.3	1.6
HC4	27.7	14.1	6.8	7.3
HC5	21.9	4.3	11.7	-7.4
HC6	18.0	12.3	11.1	1.2
HC7	16.6	6.0	8.9	-2.9
HC8	6.5	7.8	15.0	-7.2
ALL	29.9	14.3	10.7	3.6

LAGGED DATASET

HEALTH CENTERS	MAILED FIT %	— % Adults who completed FIT —		
		INTERVENTION %	USUAL CARE %	ABSOLUTE DIFFERENCE %
HC1	81.7	24.6	3.4	21.2
HC2	59.3	23.3	12.7	10.6
HC3	43.3	27.1	21.9	5.2
HC4	42.1	15.7	8.0	7.7
HC5	37.1	7.2	18.9	-11.7
HC6	26.3	17.3	13.7	3.6
HC7	33.2	9.2	11.2	-2.0
HC8	38.5	11.6	17.0	-5.4
ALL	21.0	17.5	12.7	4.8

Implementation and effectiveness in primary and lagged analysis, by health center

Absolute difference % who completed FIT



Conclusions

- An efficacious CRC screening strategy can be effective in a real-world, community health center setting
- Barriers to implementation limited overall effectiveness
- After accounting for implementation delays, which were experienced by all participating clinics, we found 5.6% higher FIT completion rates in clinics that received tools and training for a direct-mail FIT program
- Low rates of implementation were common and were associated with low levels of effectiveness.
- Mail-based fecal screening programs can have clinical impact when integrated into clinical workflows
- Emphasizes the need to identify additional strategies to support program implementation in low-resource health centers.

It takes a village:

- CHR research team:
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 - Jennifer Rivelli, MA
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 - Sacha Reich
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