Effectiveness of Colorectal Cancer Screening Messaging Among Individuals Non-Compliant with Guidelines

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Background

As the third most common cancer diagnosis and third most common cause of cancer death, colorectal cancer (CRC) represents a significant health problem for Americans.[1] Based on studies showing a substantial reduction in CRC mortality attributable to screening, the U.S. Preventive Services Task Force (USPSTF) recommends periodic screening for colorectal cancer between the ages of 50 and 75, using fecal occult blood testing, sigmoidoscopy, or colonoscopy.[2] However, only 59% of U.S. adults age 50 and older received a CRC screening in 2010.[1] CRC screening is considered one of 26 Leading Health Indicators—high priority issues—for the Centers for Disease Control and Prevention Healthy People 2020 initiative.[3]

Objective

To assess the impact of a CRC outreach campaign in a Medicare Advantage population.

Methods

Study Design: Randomized controlled trial

Data Source: Administrative medical claims and enrollment data for individuals with Medicare Advantage coverage from Humana Inc., a healthcare company providing insurance for more than 2.4 million Medicare Advantage members as of December 31, 2014[4]

Inclusion Criteria:

- Participation in select Medicare Advantage contracts
- Eligibility for CRC screening for the years 2012-2013 according to an algorithm based on medical claims and medical chart data
- Non-responsive to one-time screening reminders in 2012-2013

Exclusion Criteria: Participants were excluded if any of the following events occurred between selection for the campaign and launch: CRC screening, disenrollment, loss of eligibility for CRC screening, death.

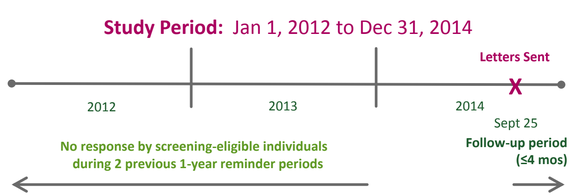
Interventions: Participants were assigned to one of two trials according to whether they had an attributed provider and within each trial were randomized to an outreach or control group. Rather than a typical ratio such as 1:1, the randomization design maximized the number of people receiving outreach letters while maintaining 80% statistical power to detect a 1.75% absolute improvement in screening, assuming a 10% rate in control (no letter) groups. Different types of outreach letter were sent on September 25, 2014 to the two trial groups:

- Provider Outreach: For all eligible individuals with an attributed provider. The letter mentioned the provider's name and encouraged the recipient to make an appointment for screening or to call Humana to report screening already obtained.
- FIT Outreach: For individuals without an attributed provider. The letter encouraged the recipient to call the provider to schedule a screening, to request a free fecal immunochemical test (FIT) kit for home testing, or to use a response card to notify Humana that screening had already been obtained.

Outcome: Participation in screening or communication of previous screening

Statistical Analyses: Chi square for comparing screened proportions between letter and control groups

Figure 1. Study Time Frame



Results

Figure 2. Participant Flow Diagram Overall

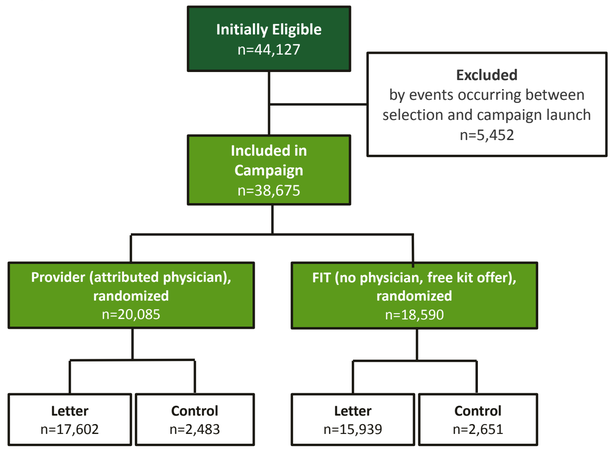


Table 1. Participant Characteristics

Outreach and control participants were similar within the Provider and the FIT outreach groups.

Measure , n (%)*	Provider		FIT	
	Letter n=17,602	Control n=2,483	Letter n=15,939	Control n=2,651
Age ≥67 years	13,505 (77%)	1,915 (77%)	13,101 (82%)	2,161 (82%)
Female	8,637 (49%)	1,241 (50%)	7,060 (44%)	1,187 (45%)
Non-Dual Eligibility	16,016 (91%)	2,256 (91%)	15,093 (95%)	2,522 (95%)
Geographic Region				
Urban Core	7,332 (42%)	980 (39%)	7,177 (45%)	1,177 (44%)
Suburban	5,490 (31%)	759 (31%)	4,849 (30%)	825 (31%)
Large Rural	2,321 (13%)	363 (15%)	1,649 (10%)	265 (10%)
Small Rural	2,454 (14%)	376 (15%)	2,251 (14%)	282 (14%)

*Column percentages, i.e., percentage of total participants in the Letter or Control arm

Figure 3. Overall CRC Screening Rates

414 *screenings were attributed to the campaign, resulting in a compliance increase of 1.2-1.3 percentage points for each form of the outreach.*

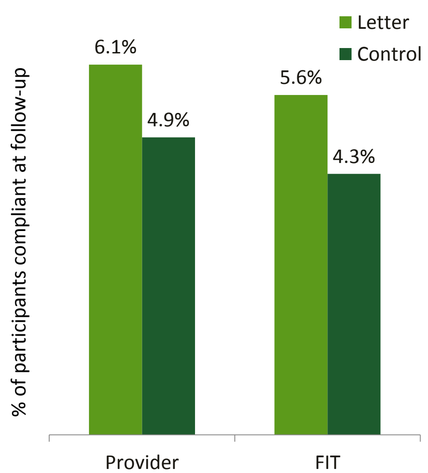


Table 2. CRC Screening Rate

The letters were effective overall. Stratified analysis suggested that the campaign was consistently effective individuals age ≥67 years and in individuals who were not dual eligible.

Participant Group	Provider			FIT		
	Letter, % compliant (n*)	Control, % compliant (n*)	Absolute Difference (P value)	Letter, % compliant (n*)	Control, % compliant (n*)	Absolute Difference (P value)
Overall	6.1% (17,602)	4.9% (2,483)	1.2% (0.014)†	5.6% (15,939)	4.3% (2,651)	1.3% (0.010)†
Age						
<67 years	6.1% (4,097)	6.5% (568)	−0.4% (0.702)	5.7% (2,838)	3.9% (490)	1.8% (0.093)
≥67 years	6.1% (13,505)	4.4% (1,915)	1.7% (0.003)†	5.5% (13,101)	4.4% (2,161)	1.1% (0.041)†
Gender						
Female	5.8% (8,637)	4.7% (1,241)	1.1% (0.108)	5.8% (7,060)	5.9% (1,187)	−0.12% (0.872)
Male	6.4% (8.965)	5.1% (1,242)	1.4% (0.063)	5.4% (8,879)	3.1% (1,464)	2.3% (<0.001)†
Geographic Location						
Urban Core	6.4% (7,332)	5.4% (980)	1.0% (0.225)	5.5% (7,177)	4.6% (1,177)	0.9% (0.216)
Suburban	6.0% (5,490)	5.3% (759)	0.7% (0.429)	5.9% (4.849)	4.7% (825)	1.2% (0.188)
Large Rural	6.0% (2,321)	4.6% (368)	1.4% (0.297)	5.4% (1,649)	1.9% (265)	3.5% (0.014)†
Small Rural	5.7% (2,454)	2.9% (376)	2.7% (0.027)†	5.3% (2,251)	4.5% (382)	0.8% (0.495)
Dual Eligibility						
Yes	6.5% (1,586)	6.2% (227)	0.3% (0.851)	3.9% (846)	3.9% (124)	<0.1% (0.989)
No	6.1% (16,016)	4.7% (2,256)	1.4% (0.011)†	5.7% (15,093)	4.4% (2,412)	1.3% (0.009)†

*n = total number of individuals in the Letter or Control arm, within the population or subpopulation
†Statistically significant at the 0.05 level

Conclusions

- A campaign consisting of educational letters encouraging CRC screening or correction of screening noncompliance records resulted in improved CRC screening compliance in a Medicare Advantage population with a two-year history of CRC screening noncompliance.
- The lack of a consistent detectable effect in some subpopulations warrants further investigation.

Strengths and Limitations

- This study was sufficiently powered to detect a significant effect and because of randomized treatment assignment was subject to minimal internal bias with respect to the outcome as measured.
- Some instances of screening recorded after campaign launch for the outreach groups were corrections of missing information; thus, results represent the impact on *documented* screening.
- Some individuals in the control groups may have actually been screened but did not communicate this because they did not receive letters. Thus, some degree of effect overestimation is possible.
- Because of the number of comparisons, the analysis is subject to the possibility that some instances of statistical significance were due to chance alone.

References

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