DEPARTMENT OF VETERANS AFFAIRS

Two VA Studies Examine the Effects of Home-Based Colorectal Cancer Screening and Telephone Follow-Up in a Rural State*

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Introduction

Colorectal cancer (CRC) is the third most common cancer diagnosed in the United States, with close to 143,000 American diagnosed in 2013 and 51,000 deaths resulting from this disease.[1] Since CRC arises from precancerous polyps, population screening aimed at early detection and removal of these growths can significantly decrease incidence of the cancer's development.[2] It has been estimated that if all eligible adults in the US aged 50 and older were offered screening, over 18,000 CRC deaths could be prevented, with a cost-effectiveness ratio of close to $12,000 per year of life gained.[3]

Unfortunately, receipt of CRC screening can be hindered by a variety of factors, one being rural residence. Individuals living in rural areas may face problems attendant to long travel distances to a medical center where screening—primarily colonoscopy—can take place. This issue is particularly relevant to the more than 3.2 million enrolled Veterans living in rural and highly rural areas who may access colonoscopy at a Veterans Administration Medical Center. Furthermore, risk of CRC increases with age, with 90% of new cases occurring in those over age 50[1]

Key Findings

Mailed, home-based colorectal cancer screening using the fecal immunochemical test (FIT) was found to be an effective way to screen individuals who may not have otherwise undergone testing.

FIT mailings preceded by telephone assessment of interest, then followed by telephone reminders to return the tests resulted in a higher rate of test returns than did FITs that were mailed without telephone intervention, leading to cost savings due to fewer wasted tests.

However, overall, a higher percentage of eligible individuals in the mail-only group were screened for CRC than in the telephone intervention group. This was potentially due to challenges in reaching people by telephone and/or because mailing FITs first allows people to examine the test prior to agreeing/declining to participate. Either approach would be effecting depending on context (see *Impact*).

which is of concern for the rural Veteran population, as 80% is over 45 years old.

An innovative way to improve access to CRC screening is to use the fecal immunochemical test (FIT). A FIT can be mailed to the patient, the sample collected by the patient, and then returned by mail to the VA for analysis, thus obviating the need for patient travel. This research brief describes two studies on the deployment of FITs as a screening tool: The first sought to determine whether a one-step mailing of FITs and educational materials to Veterans' homes resulted in increased screening rates, while the second, follow-up study examined whether introductory and reminder telephone calls would increase the number of eligible patients returning the FITs, and compared the intervention costs between the two protocols.

Methods

Study populations

Both studies enrolled Veterans aged 51 to 64 years old who had had two or more primary care visits at the Iowa City VA Health Care System in the prior 12 months and who, according to VA records, were overdue for CRC screening. The Iowa City VA catchment area was selected for its significant number of rural Veterans who face substantial driving distances to the VA medical center, though urban Veterans were also included. Subjects of the two studies shared common characteristics as determined by identical questionnaire and survey instruments; however, the respective study samples were separate.

Study protocols

In the **first study**, subjects were divided into three groups: a usual care group (UC) which received no mailings, an education only group (ED) which received a mailing containing CRC screening education materials, a description of the study and an eligibility questionnaire, and a third group (FIT) which received the same materials as the ED group plus a FIT with instructions and a postage-paid return envelope. Patient demographics and reasons why individuals had not undergone colonoscopy or taken an at-home screening test were also assessed via questionnaire.

In the **second study**, subjects were mailed recruitment packets including consent and educational materials. A week after the packets were mailed, subjects received a telephone call to assess interest in participating in the study. Responses to the eligibility questionnaire and survey were given over the phone.

FITs were then mailed to eligible participants who agreed to complete the FIT. If the FIT was not received for analysis within two weeks of the introductory telephone call, participants were given reminder phone calls. The FIT return rate of the telephone intervention study was compared to the results of the earlier study.

Findings

The **first study** found that a significantly higher percentage of the full sample of those who received educational materials and a FIT by mail underwent CRC screening (21%) than those who received only educational materials or usual care (6% in each group). Notably, a comparison of screening rates across *eligible participant* groups showed that 92% of the FIT group received CRC screening in relation to only 2% of the education only group. These results along with the numbers of study participants are shown in **Table 1**.

The survey component of the study found that the most commonly cited reason for not undergoing in-home testing was lack of recommendation by the patient's healthcare provider (62%).

In the **second study**, a comparison of response rates between the mail-only ("low intensity intervention" (LII)) group in the earlier study and the group receiving telephone calls ("high intensity intervention" (HII) group) showed that while a higher proportion of those in the LII group were screened for CRC (21% vs. 13%), respondents in the HII group returned a higher proportion of FITs out of all those mailed: 85% vs. 14%. These results as well as the demographics of both studies are shown in **Table 2.**

Analysis of differences in intervention *costs* indicated a savings in the HII group due to fewer wasted FITs; the HII group had a lower cost per FIT returned ($27.43 vs. $44.86 in the LII group).

This work was funded by the Veterans Administration Office of Rural Heath (ORH). For more information about these studies, contact Mary Charlton at (319) 338-0581, ext 93877, or mary.charlton@va.gov.

Table 1 Method of Colorectal Cancer Screening Within 6 Months of Mailing Intervention by Study Group for Full Sample and for Eligible Respondents Only

	FIT	Education	Usual Care	
Screening Type[a]	% (n)	% (n)	% (n)	*P* Value
Full sample	n = 500	n = 499	n = 500	
No screening performed	79% (397)	94% (471)	94% (472)	
Fecal immunochemical test (FIT)	14% (71)	0% (0)	0% (0)	
Colonoscopy	6% (30)	5% (27)	4% (21)	
Guaiac FOBT (gFOBT)	0% (2)	0% (1)	1% (7)	
Total screened (any method)	21% (103)	6% (28)	6%(28)	<.0001
Eligible respondents only	n = 71	n = 41		
No screening performed	8% (6)	98% (40)	–	
Fecal immunochemical test (FIT)	90% (64)	0% (0)	–	
Colonoscopy	2% (1)	2% (2)	–	
Guaiac FOBT (gFOBT)	0% (0)	0% (0)	–	
Total screened (any method)	92% (65)	2% (2)	–	<.0001

[a]Screening was classified according to the first test performed in the 6-month follow-up period.

Table 2 Entire Sample and Survey Participant Demographics

Entire Sample

Demographic	HII* (N=2,392) [%, (n)]	LII* (N=500) [%, (n)]	P-Value
Age, mean (SD)	60 (4)	59 (4)	<0.0001
Male	96% (2302)	87% (435)	<0.0001
Rural or Highly Rural	53% (1267)	50% (249)	0.20
Service Connected Disability	39% (934)	37% (185)	0.39
CRC* Screening within 6 months of Study Invitation	7% (161)	14% (71)	<0.0001
FIT	1% (17)	0% (2)	
FOBT	6% (135)	6% (30)	
Colonoscopy	0% (1)	0% (0)	
DCBE	13% (314)	21% (103)	
*TOTAL			

Eligible Survey Participants

Demographic	HII* (n=413) [%, (n)]	LII* (n=60) [%, (n)]	P-Value
Age, mean (SD)	60 (4)	60 (4)	-
Male	96% (397)	87% (52)	0.006
White race/ethnicity	92% (380)	95% (57)	0.78
Rural or Highly Rural	54% (225)	42% (25)	0.06
Married/Partnered	57% (235)	60% (36)	0.68
Number of People Living in Household, mean (SD)	2 (1)	2 (1)	-
At least some college	62% (257)	58% (35)	0.55
General Perception of Health (Good, Very Good, or Excellent)	69% (286)	75% (45)	0.56
Has someone to take him/her to a health care appointment	89% (367)	93% (56)	0.56
Has both VA & non-VA primary care providers	36% (147)	29% (17)	0.25
Other healthcare coverage in past 12 months	30% (125)	37% (22)	0.32
Private	9% (37)	5% (3)	0.30
Military	5% (20)	3% (2)	1.00
Medicaid	15% (64)	8% (5)	0.14
Medicare			
CRC* Screening within 6 months of Study Invitation**	39% (161)	90% (64)	
FIT	1% (3)	0% (0)	
FOBT	5% (22)	2% (1)	
Colonoscopy	0% (0)	0% (0)	
DCBE	45% (186)	92% (65)	<0.0001
TOTAL			

*HII = high intensity intervention; LII = low intensity intervention; CRC = colorectal cancer
**n (%) of total eligible to participate, n=414 for HII, n=71 for LII

Conclusions

A one-step mailing of FITs and educational materials to the homes of patients overdue for CRC screening led to significantly higher screening rates than mailing educational materials alone or usual care. Telephone calls assessing patient interest prior to mailing and reminders to return the FITs resulted in fewer wasted test kits and decreased costs, though a lower percentage of screenings among the overall study sample. Either approach—aimed at overcoming the distance barriers sometimes involved in CRC screening of rural patients—was found to be viable and could be employed depending on factors such as location, patient population, FIT cost, and reimbursement and personnel costs.

Impact

- A mailed, home-based method of colorectal cancer screening that can overcome distance barriers may be particularly relevant to patients living in rural areas. It could be incorporated into practices of small rural and remote clinics and into the proactive approaches being adopted by the VA patient-aligned care teams.
- Either FIT screening approach—the mail-only protocol or the telephone-assisted approach—could be employed depending on factors such as location, patient population, FIT cost and reimbursement and personnel costs.

References

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***These studies were originally published as:** "Evaluation of a Home-Based Colorectal Cancer Screening Intervention in a Rural State" in: *Journal of Rural Health*, http://onlinelibrary.wiley.com/doi/10.1111/jrh.12052/pdf
and "Increasing Colorectal Cancer Screening in an Overdue Population: Participation and Cost Impacts of Adding Telephone Calls to a FIT Mailing Program" in: *Journal of Community Health*, http://link.springer.com/article/10.1007/s10900-014-9830-1

To cite this brief: Charlton M, Mengeling M, Schlichting J, Halfdanarson T, Makki N, Malhotra A, Stacey Klutts J, Levy B, Kaboli P. Two VA studies examine the effects of home-based colorectal cancer screening and telephone follow-up in a rural state [Issue Brief]. Veterans Rura Health Resource Center—Central Region; Washington (DC): VHA Office of Rural Health. Spring 2014, #1. Available from: http://www.ruralhealth.va.gov/publications.asp.