

CLINICAL PRACTICE

# Improving colorectal cancer screening rates using motivational interviewing

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## ABSTRACT

**Background and objective:** Early diagnosis of colorectal cancer (CRC) through screening is associated with survival rates of more than 90%. Nearly half of American adults are not compliant with recommendations. The purpose of this project is to implement and evaluate an evidenced based protocol utilizing motivational interviewing as an intervention to improve CRC screening rates among a Veteran population.

**Methods:** The project design includes a single session telephone based motivational interviewing session two weeks after receipt of fecal immunochemical test (FIT) for home screening. A motivational interview roadmap was developed to guide the telephone session.

**Results:** All participants were male and 76% had previously completed a CRC screening test. Fourteen percent (n = 7/50) of participants returned their FIT within 2 weeks. Of the 38 participants eligible for telephone based motivational interview 66% (n = 25) were unreachable by telephone and received one or two voicemail messages that stressed the importance of returning the FIT. Of the motivational interviewing recipients, 62% (n = 8/13) successfully returned their FIT.

**Conclusions:** These results provide beginning evidence for the effectiveness of motivational interviewing to improve CRC screening rates. Issues with system processes and healthcare provider behaviors were identified and recommendations for improvement are provided.

**Key Words:** Colorectal cancer screening, Health behavior change, Motivational interviewing

## 1. INTRODUCTION

Colorectal cancer (CRC) is the second leading cause of cancer related death in the United States.<sup>[1]</sup> According to the American Cancer Society, all people over the age of 50 are at varying levels of risk for CRC and death rates are largely considered preventable.<sup>[2]</sup> African American adults have the highest incidence and mortality rates; the current mortality rate in African Americans is 50% higher than Caucasians, which is double the Healthy People 2020 goal.<sup>[2-4]</sup> Early di-

agnosis of CRC through routine screening is associated with survival rates of more than 90%.<sup>[5]</sup> CRC screening remains one of the most underused cancer screening methods, as nearly one-third of American adults are not compliant with screening recommendations.<sup>[1,5]</sup> Screening and early diagnosis of colon cancer is a cost-effective prevention strategy, leading to earlier detection and improved survival rates.<sup>[6]</sup>

Early stage CRC does not always cause symptoms, therefore screening is particularly essential; those who do suffer symp-

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toms may present with blood in the stool, stomach pains or unexplained weight loss.<sup>[7]</sup> The U.S. Preventive Services Task Force (USPSTF) recommends CRC screening for low risk men and women aged 50-75 using high-sensitivity fecal occult blood test (FOBT) annually, sigmoidoscopy every 5 years, or colonoscopy every 10 years.<sup>[8]</sup> These tests may be used alone or used in combination.<sup>[1,8]</sup> In a systematic review, Lin and colleagues concluded that screening with the FOBT reduces CRC deaths.<sup>[9]</sup> The fecal immunochemical tests (FITs), which uses antibodies to detect blood in the stool, have improved sensitivity compared with FOBT for detecting CRC.<sup>[1,9]</sup> The FIT has a sensitivity of 100% and 99% specificity, and the FOBT has 50% sensitivity and 98% specificity.<sup>[10,11]</sup> The U.S. Preventive Services Task Force highly recommends CRC screening, however, despite the strong evidence for CRC screening, patient participation in screening remains low.<sup>[6,8,12]</sup>

The primary care setting is in dire need for improved interventions, especially for minorities and older individuals.<sup>[13]</sup> The causes of poor screening compliance are complex and likely related to a combination of clinician and counseling practices.<sup>[14]</sup> Motivational interviewing has shown promise in improving health promotion behavior, including cancer screening.<sup>[13]</sup> The purpose of this project is to implement and evaluate an evidenced-based protocol utilizing motivational interviewing (MI) to improve FIT return rates among a Veteran population in the primary care setting.

### 1.1 Literature review

There are more than 200 randomized control trials showing positive effects of MI on many health conditions.<sup>[15]</sup> Brief MI sessions (15-30 minutes) have been shown to improve health behaviors such as improved dietary habits, increased exercise participation and medication adherence.<sup>[16-18]</sup> Some exemplar studies have demonstrated MI as a useful tool for health education and motivating several types of health promoting behaviors. Health outcomes have been improved with MI such as reduction in blood pressure, body mass index and cholesterol levels.<sup>[17,19]</sup>

Investigators have explored the barriers surrounding CRC screening, however, few have examined personalized interventions promoting screening in diverse primary care populations.<sup>[18]</sup> The majority of interventions for increasing CRC screening rates have primarily used education-based approaches, which do not address motivation and self-efficacy to engage the patient in a particular healthcare behavior.<sup>[20]</sup> There is growing literature surrounding telephone counseling for disease prevention in a variety of settings, however, no studies were found to directly correlate a telephone based motivational interview with FOBT/FIT return rates.<sup>[13,21,22]</sup>

Few studies have focused on the effects of MI and CRC screening, however MI has been used to explore behaviors surrounding primary prevention and cancer screening.<sup>[13,22]</sup> Baker et al. designed an intervention to address reasons for unsuccessful CRC screening in those whom had previously completed a FIT.<sup>[23]</sup> The intervention group received a mailed reminder letter, a free FIT with low literacy instructions and a postage paid return envelope. The rate of completion in the intervention group was 82.2% versus 37.3% in the usual care group ( $p < .001$ ). This study suggests it is possible to achieve high rates of repeat adherence with individualized reminders.

Only one study directly compared individualized tailored health counseling or motivational counseling, compared to usual care. In a longitudinal randomized controlled trial conducted by Menon et al. two separate phone based interventions were designed to increase CRC screening.<sup>[13]</sup> Both interventions addressed beliefs such as benefits, self-efficacy and barriers surrounding screening choices. A one-time motivational telephone intervention was developed and the outcome of interest was completion of any CRC screening test within 12 months. Both the individually tailored counseling calls and the motivational interview produced small increases in CRC screening, however the tailored counseling group was statistically significant as this group had 2.2 times the odds of completing post-intervention CRC screening. The timing and method of delivery of the interventions were two factors noted for continued research.<sup>[13]</sup>

### 1.2 Motivational interviewing

MI, originally developed as a substance abuse intervention, has been adapted over the years to target numerous behaviors in the healthcare setting.<sup>[24]</sup> Motivational interviewing is a client-centered therapeutic approach aimed to help patients understand and resolve their ambivalence about behavior change.<sup>[20]</sup> A partnership is formed between clinician and patient through open-ended questions, reflections, and an understanding of the patient's personal values. The goal is to lead the patient towards identification of potential barriers and enhance self-efficacy towards attaining their health change goal. The patient is the one to verbalize their ideas and plan of action, while the healthcare provider simply facilitates. MI is based on four key processes: 1) therapeutic engagement, 2) focusing on an agenda, 3) evoking change, and 4) making a plan of action. The spirit of MI encompasses a collaborative process, using the ideas of the client to autonomously evoke change and proceed when ready.<sup>[15]</sup> Motivational interviewing interventions do not need to be extensive to be effective and can be easily be integrated into existing healthcare models.<sup>[25]</sup>

For this project, a MI roadmap was developed based on the roadmap created by Wahab et al. for MI telephone intervention.<sup>[22]</sup> The road map allows the encounter to be authentic, yet aids the interventionist with the skills and techniques needed to navigate the conversation. The details of the adapted road map used for this project can be seen in Figure 1. The use of motivational interviewing, specific to this project, is to support participants to think and talk about their thoughts and feelings concerning CRC screening.

## 2. METHODS

### 2.1 Setting

The primary goal of this project is to assist a VA medical center in improving their CRC screening rates. The medical center's CRC screening rates were reported at 76.98% in 2015, 78.2% in 2014, 76.4% in 2013, and 74.8% in 2012.<sup>[26-30]</sup> These rates are below the VA benchmark of 82.1% despite appropriate clinical reminders in place.<sup>[30]</sup> This facility is located in an urban Midwestern area and the project was implemented in the community-based primary care clinic that has approximately 1,100 patient visits per month. This clinic has 6 physicians and 2 part time nurse practitioner (NP) providers; other staff includes clinical pharmacists, registered nurse (RN) care managers, LPNs and health technicians. This clinic is a teaching clinic for physician residents and nurse practitioner students. CRC screening is the responsibility of the provider (MD and NP). The clinic standard of care is for the provider to place an electronic lab order for FIT testing and give the patient the FIT test packet, which includes instructions on use and a pre-paid return envelope. The providers have access to current practice guidelines, intranet based screening guidelines and an embedded clinical reminder system, which prompts the provider when patients are overdue for their prevention screening.

### 2.2 Ethical considerations

This project was approved by both the affiliate University and VA medical center IRB, under expedited review and was determined to be a minimal risk study.

### 2.3 Study sample

Participants were recruited from a convenience sample of those with appointments in the clinic, on days when the project leader was available, over a four-month time frame. After a review of the electronic medical record (EMR), it was determined if the participant was eligible for recruitment. Inclusion criteria included English-speaking, aged 50-75 and in need of annual CRC screening; this includes those patients whom have never undergone CRC screening or those who are due for their annual FIT. Participants with a known history of CRC or total colectomy were excluded. A sample of

50 patients was chosen, as this was a quality improvement project; no power analysis was performed to determine effect size.

## 2.4 Protocol

### 2.4.1 Recruitment phase

- (1) When the patient checked in for their clinic appointment, the EMR was reviewed for eligibility. If eligible, the purpose of the project was explained. If the patient was interested in participating, a participant information sheet was provided.
- (2) Participant telephone number (with alternate as applicable) was verified for follow-up. The participants were asked about any previous CRC screening experience and/or knowledge about CRC screening.
- (3) The participant was provided with a FIT and basic instructions on how to collect the fecal sample and how to return it in the pre-paid envelope. Since a provider must place the FIT order, a flyer was given to the patient to hand to their provider so an order could be placed. The participant was given the opportunity to ask any questions.

### 2.4.2 Motivational interviewing phase

- (1) Approximately two weeks after the clinic visit, the EMR was reviewed to ensure the FIT was ordered and assessed if the FIT was returned. If the order was missing, an order was placed. If the participant had returned the FIT, they were not contacted, as the CRC screening was complete. If the FIT was not returned, the participant was called to begin the MI intervention.
- (2) If the participant answered the phone, the adapted road map (see Figure 1) was used to guide the call. If the participant did not answer the telephone, a scripted telephone message was left (see Figure 2). If the participant was not reached by telephone on the first attempt, a second attempt was made approximately 2-3 business days later.
- (3) A final EMR review was conducted one month after the date the FIT was received to determine if it was completed.

## 2.5 Data analysis

Descriptive statistics was used to summarize and describe demographic characteristics and length of time of the MI call.

## 3. RESULTS

### 3.1 Demographics

Between August and December 2016, a total of 56 participants were recruited. Six refused to participate in the project,

some were not interested in participating in research or re- Veterans, the majority were African American (72%) and the fused CRC testing in any form. All participants were male average age was 65 (SD = 6) years old.

<p><b>Introduce Self</b> → “Hello Mr./Ms. __ (participant name) __. My name is {X}, from the {X facility}. You may remember that when you left the clinic on __ (date of visit) __, I mentioned you'd receive a call to discuss the status of your colorectal cancer screening test”</p> <p><b>Ask if this is a good time to talk</b> → If no, ask when a better time to talk would be?</p> <p><b>Establish rapport</b> → “I'd like to hear about how you're managing your health”</p> <p><b>Ask permission to explore colorectal cancer screening</b> →</p> <p><b>Ask what is known about colon cancer risk screening</b> -Reflective listening (use throughout the call) -Summarize what has been discussed thus far</p> <p><b>Provide-Elicit-Provide: Ask if it would be okay to share some additional information about screening and ways to prevent colon cancer with them? If they say “yes”, provide information and then make sure to elicit feedback after providing. If they say “no”, hold off</b> → “So what have you heard about colorectal cancer?” “What do you know about the FIT screening?” “Let me add a couple of things for you.” “We know that CRC oftentimes does not present with any symptoms. That is why it is the second leading cause of cancer death in both the United States and Illinois. Sometimes, abnormal growths, called polyps, form in the colon and turn into cancer. Screening tests find these polyps so they may be removed before they turn into cancer. When we find these early on, treatment often leads to a cure.”</p> <p><b>Assess motivation, confidence and readiness to get screened</b> → “What works now? What doesn't? What have you tried before?” “What makes you concerned?” “What's most important now?”</p> <p><b>Explore ambivalence</b> → “What makes you concerned about colorectal cancer?” “What makes you think it's a good idea (or not) to change?” “Why would now be a good time to start/continue your annual screening?”</p> <p><b>Elicit change talk and enhance motivation</b> → “Tell me more about that” This idea further explores the desire, ability and need to change. Looks at what steps have been taken already and plans for future change.</p> <p><b>Where does all of this leave you now? What next?</b> → “Where do you stand on this issue, at least for today?” “How confident are you that you can make this change?” “When else in your life have you made a change like this?”</p> <p><b>Support commitment and enlist support</b> → “On a scale of 1-10, where were you before? And now?” “What will remind you? How can I help?”</p> <p><b>Closing: Ask about motivation and confidence one final time</b> “Thank you so much for your time. I hope you found this conversation helpful and learned something new about the dangers of colorectal cancer. If you should have any further questions please let me know. Do you still have my contact information?”</p>
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**Figure 1.** The motivational interviewing road map

<p>Hello Mr./Ms. __ (participant name) __ My name is {X}, from the {X facility}. You may remember that when you left the clinic on __ (date of visit) __, I mentioned you'd receive a call. I am hoping to speak with you further and will try to reach you again soon. If you would like to return my call you may do so at {X}. Thank you so much for your time and have a good day.</p>
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**Figure 2.** Script for telephone voice message

### 3.2 Patient experience level with CRC screening

Knowledge and/or information about CRC screening was not specifically collected for this project, however, general questions surrounding participant familiarity and experience level with screening options were addressed during the recruitment phase conversation. For example, when asked what participants knew about CRC, most participants replied that they were aware of the test(s) available and that it was important for their health. Participants voiced familiarity with the concept of screening and that the test(s) looked for cancer. Of the total participants, 76% (n = 38) had previously completed a CRC screening test (colonoscopy or FIT/FOBT); 20% (n = 10) had CRC screening ordered by their provider in the past, but never returned FIT or kept the scheduled colonoscopy appointment. Only 2 participants had never participated in any type of CRC screening (see Table 1).

**Table 1.** Demographic characteristics (n = 50)

Items	Number	Percentage (%)
<b>Age</b>		
50-59	13	26
60-69	23	46
70-75	14	28
<b>Gender</b>		
Male	50	100
Female	0	0
<b>Ethnicity</b>		
African American	36	72
Caucasian	9	18
Hispanic	3	6
Asian	2	4

### 3.3 Fecal immunochemical test return rates

Fourteen percent (n = 7) of the participants returned their FIT and had lab results at the 2-week EMR review. FIT orders were never placed for three participants despite the clinical reminder for CRC screening and order reminder flyer. Two participants stated they had mailed back their FIT, however their results were never received/processed. Therefore, these twelve participants were not eligible for the MI telephone call.

The eligible 38 participants were contacted by telephone. Thirteen participants were contacted and received the MI intervention. Of these participants 62% (n = 8) successfully

returned their FIT (see Table 2). Of the 13 who received MI, ten participants had previously completed a colonoscopy however none of the group had ever completed a FOBT/FIT in the past.

Twenty-five participants were unreachable by telephone but were left a scripted voicemail twice; with the exception of 2 participants who only received one message due to phone being disconnected or a full voice mailbox. After voicemail messages were left, 40% (n = 10/25) of participants returned their FIT.

### 3.4 Motivational interviewing intervention

The time spent on the MI call ranged from 3 to 9 minutes in length. The mean time for the call was 5.6 minutes (SD = 2.29). Although no direct dialogue was recorded for analysis, a few insights were appreciated:

- Asking for permission and inquiring about their previous knowledge of CRC screening was an important step in immediately establishing rapport over the telephone.
- Exploring confidence, readiness and motivation set the stage for the conversation. None of the participants who received the MI call had ever completed an at home fecal collection kit of any kind, so the responses varied from fear of handling the sample and questions about the postage service.
- Exploring ambivalence was perhaps the most enlightening aspect of the intervention. The goal of this was to explore why a participant would or would not get screened. The majority of all responses echoed the fact that “it must be important or you would not be calling me.” Participants seemed to agree to screening simply because someone took the time to follow up and because they were asked to do so.
- In order to elicit change talk, the participant must engage in a conversation based on motivation for getting screened and articulate those plans for making the behavior change. The participants were agreeable to screening, simply because of the follow up phone call, not because the conversation aimed at decreasing resistance talk.

**Table 2.** Effects of motivational interview intervention vs. voicemail message(s)

	n	FIT Returned	%	FIT Unreturned	%
Received Intervention	13	8	62	5	38
One or Two Voicemail Messages	25	10	40	15	60
States Mailed Back	2				
No Order Placed	3				
Returned before Motivational Interview	7				

#### 4. DISCUSSION

Of those participants who received the MI intervention, 62% successfully returned their FIT. These numbers are supportive of MI as an intervention that can motivate positive behavior change. The individualized MI intervention seemed reasonable as a written protocol, however in application was time consuming and in practice would be a costly intervention. It is important to realize that over half (66%) of the participants were not reachable by telephone and received one or two voice messages. The participant may have been unfamiliar with the number that comes up on their caller ID and decide not to answer it. Of the group that received one or two voice messages, 10 participants returned their FIT. Although this was not the intervention under study, an automated voice message reminder could be a more feasible and cost appropriate choice for this facility.

Another issue encountered in this project was that FIT orders were not placed by the provider despite their annual EMR clinical reminder and paper recruitment flyer reminder. In most cases a rotating physician resident provided the clinic visit, as this is common in an academic teaching environment. Fifteen participants were missing a FIT order after the scheduled visit and had to be placed by another provider, making this a provider related issue that requires attention. One potential solution is to expand the ordering capabilities of the registered nurses in the clinic to be able to order FIT. The registered nurses address various clinical reminders when checking in the patients, so they could easily address CRC screening and place the FIT order. A provider failing to place an order, despite following the proper steps for patient education and screening is a major set back to successfully improving CRC screening rates.

Another identified provider issue is the inconsistent guideline interpretation for CRC screening. Some providers voiced opinions that if a colonoscopy was received in the past ten years, the annual FIT screening was not necessary. Others believed the guidelines to recommend FIT annually in combination with the ten-year colonoscopy, or that a FIT is sufficient on its own without the need for any colonoscopy screening. Ongoing and continuing education for primary care providers can standardize the ways in which guidelines are followed and managed. Additionally, it would be recommended that the VA share with physician residents their individualized performance metrics to recognize areas for improvement and ultimately increase adherence to screening guidelines.

Lastly, there were two participants contacted for intervention that stated they had sent back their FIT, however their results were never recorded in the EMR. This leads us to question the pre-postage mail back process. Was the FIT mailed as

stated? Was it lost due to the postal system? Mishandled by the lab that received it? Many factors could be effect the return process.

#### Limitations

One significant limitation of these findings is the small number of participants who received MI. Telephone contact was a limitation, as over half of the participants (66%) were not reachable by phone. Looking retrospectively at the protocol design, perhaps the initial face-to-face recruitment encounter was a missed opportunity for MI. The mean MI phone call for this project lasted 5.6 minutes; a possibility for design improvement could be to tailor this intervention to a real time encounter for improving screening rates. Another limitation was the providers not placing the order for FIT. This is an opportunity for ongoing education on standard protocol and national guideline recommendations.

#### 5. CONCLUSION

This project demonstrated beginning evidence that MI can be effective in improving CRC screening rates. Each facility has their own unique issues to the population in which they serve; this facility struggled with provider specific issues indicative of the need for provider education to improve CRC screening rates. There are healthcare providers, such as RNs, capable of ordering primary care screening tests but in this case are underutilized. Additionally, issues such as successful postage return and unreachable patients by telephone are specific issues needing attention at the system level.

Further work is needed to understand the complexity of CRC screening and behavior change. Despite the difficulties with telephone communication, for those that could be reached, a 62% return rate was successful when participants were able to work through and resolve their ambivalence surrounding CRC screening. Ultimately, many barriers and factors surrounding health behavior change exist on both the clinician and patient side. Based on this project, exploring innovative avenues for patient and provider education, outreach and the ability to choose the preferred CRC screening test to meet their needs could positively influence cancer prevention efforts.

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#### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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