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E-mail to Promote Colorectal Cancer Screening Within Social Networks: Acceptability and Content

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Abstract

Effective techniques to encourage colorectal cancer (CRC) screening in underscreened populations have included social support interventions and email reminders from physicians. Personalized email messages to promote CRC screening within social networks could be even more effective, but have not been studied. We interviewed 387 email users, aged 42-73 years in Massachusetts, Hawaii, and Georgia. Participants were asked to edit a sample message in which the sender shares a recent colonoscopy experience and urges the recipient to discuss CRC screening with a doctor. For those reporting willingness to send this message, changes to the message and suggested subject lines were recorded. Edited text was analyzed for content and concordance with original message. The majority of participants (74.4%) were willing to email a modifiable message. Of those willing, 63.5% edited the message. Common edits included deletion (17.7%) or modification (17.4%) of a negatively framed sentence on colon cancer risks and addition or modification of personalizing words (15.6%). Few edits changed the meaning of the message (5.6%) and even fewer introduced factual inaccuracies (1.7%). Modifiable email messages offer a way for screened individuals to promote CRC screening to social network members. Accuracy and impact of such messages should be further studied.

Effective techniques to encourage colorectal cancer (CRC) screening in underscreened populations have included social support interventions and email reminders from physicians. Personalized email messages sent between members of a social network may be an inexpensive and effective way to promote CRC screening but have not previously been studied.

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The goal of our study was to learn whether study participants drawn from a population of insured adults ages 40-70 would be willing to edit peer-directed messages that promote CRC screening. Using the Persuasive Health Message (PHM) framework (Witte, 1992a; Witte, 1992b; Witte, 1992c; Witte, 1993; Witte & Proverb, 1995) and drawing on concepts of social support (House, 1981), we sought to describe the ways these individuals would choose to personalize a sample message and to assess willingness to forward edited messages to peers. Our report aims to contribute to the field of health communication by providing insight into the way lay people perceive their role in promoting CRC screening to peers and by describing their choices of language and content when modifying a peer-directed communication.

In our review of the literature, we discuss reasons why personalized peer communication to social network members could be an effective means of promoting CRC screening. We describe the PHM framework and theories of social support and discuss applications to a peer CRC screening message. Finally, we review past email interventions promoting CRC screening and explore reasons why adults aged 50 and over might be willing to forward edited email messages to peers.

Peer-to-Peer Communication within a Social Network

Peer-to-peer social network-based interventions may be particularly effective in addressing certain barriers to CRC screening, such as absence of provider recommendation, discordance between physician and patient preference for screening modality, lack of awareness of the need for screening, and personal barriers such as fear or embarrassment (Berkowitz, Hawkins, Peipins, White, & Nadel, 2008; Beydoun & Beydoun, 2008; Klabunde et al., 2005; Sequist, Zaslavsky, Colditz, & Ayanian, 2011). For a patient whose provider has never recommended screening, a personalized communication from a peer may be an effective initial prompt. A patient for whom fear or embarrassment are the primary reasons for lack of screening may respond to a personalized expression of support or humor from a peer. Learning that screening was manageable for a peer can also open the door to further offline discussions carrying additional benefits.

Members of a social network exert influence on each other in a variety of ways, including through communication of subjective norms (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and provision of social support (House, 1981). Individuals relate information about others to themselves, identifying similarities and developing a sense of identity as a member of a group, a process known as ‘social comparison’ (Wood, 1996; Proudfoot et al., 2012). In a 2008 workgroup discussion of peer-to-peer communication and cancer prevention, Ancker et al. (2009) identify a related concept, ‘peer modeling,’ as one of the key avenues of peer-to-peer communication. These authors do caution that although such modeling can have a positive effect on behavior, it can also promote maintenance of unhealthy behaviors. Peer modeling and communication of subjective norms among family and friends have been shown to influence CRC screening rates, particularly in minority and underscreened populations (Honda & Kagawa-Singer, 2006).

Ancker et al. (2009) identified several additional avenues by which peer-to-peer communication can impact cancer prevention efforts, including via provision of emotional and instrumental social support, and information sharing (also known as informational support). Greater social connectedness has been associated with increased screening uptake (Kang & Bloom, 1993; Kinney, Bloor, Martin, & Sandler, 2005; Ye, Williams, & Xu, 2009) and successful interventions aimed at encouraging cancer screening in underscreened populations have sought to build on existing social network ties (Duan, Fox, Derose, & Carson, 2000; Gotay & Wilson, 1998; Gozum, Karayurt, Kav, & Platin, 2010; Gravell, Zapka, & Mamon, 1985; Zhu et al., 2002). An additional effect of peer-to-peer communication, highlighted by Proudfoot et al. (2012) is the potential for benefit to the person providing help, as elucidated in the helper therapy principle. Benefits to the helper include an enhanced sense of interpersonal competence from impacting another's life (Proudfoot et al., 2012; Skovholt, 1974). Thus, in addition to the desire to provide social support to peers (and any other altruistic intentions), personal benefits may motivate people to pass along cancer screening recommendations.

Designing a Peer-To-Peer Persuasive Health Message

Using the Persuasive Health Message (PHM) framework developed by Witte (Witte, 1992a; Witte, 1992b; Witte, 1992c; Witte, 1993; Witte & Proverb, 1995), we designed a message promoting CRC screening, intended to be sent by a person who had completed CRC screening to members of his or her peer network. The PHM framework draws on elements from the theory of reasoned action (Fishbein & Ajzen, 1975), the elaboration likelihood model (Petty & Cacioppo, 1986) and protection motivation theory (Rogers, 1983). This framework identifies *constant* and *transient* factors that must be considered in the development of a persuasive health message. Constant components include (1) a *threat* message, in which readers are made to feel susceptible to a severe threat; (2) an *efficacy* message, in which readers are convinced that they are able to perform the recommended action (self-efficacy) and that this action *effectively* averts the threat; (3) various *cues*, influencing the persuasive process in an indirect manner (e.g. the perceived credibility or attractiveness of a source); and (4) *targeting toward a specific audience*. Transient components of the PHM framework include message goals, salient beliefs and referents, culture, environment and preferences. This framework informed our initial drafting of the message and our decision to invite participants to modify messages. We identified the goals of our message by determining what information was relevant to CRC cancer screening and we made initial assumptions regarding salient beliefs and referents. We expected that if participants modified the peer-directed messages they would introduce personalized elements of culture, environment and preferences, based on their relationship with and understanding of the peer recipient. Friends and family members are frequently identified as sources of memorable cancer screening messages (Smith et al., 2009) suggesting that a CRC screening message sent from a peer could also act as a cue, lending credibility and enhancing trust in the message.

The Role of Emails in CRC Screening Promotion

To date, few studies have examined the use of email to promote CRC screening and those of which we are aware have focused on messages sent from healthcare providers (Sequist et al., 2011), health plans (Muller, Logan, Dorr, & Mosen, 2009), or Electronic Health Records via automated messaging (Green, 2013). These studies have documented some improvement in CRC screening rates (Muller et al., 2009; Sequist et al., 2011); limitations to these studies include the temporary nature of screening rate improvement (Sequist et al., 2011). Email and use of other media to convey personal experiences with cancer screening has been suggested by patient focus groups as a useful way to present patient education (Greisinger, Hawley, Bettencourt, Perz, & Vernon, 2006).

Patient outreach interventions aimed at improving CRC screening rates have more frequently relied on telephone or mail reminders (Fortuna et al., 2013; Fiscella et al., 2010; Gupta et al., 2013) sent by providers, researchers or health plans, however the rising numbers of Americans with access to the Internet introduces opportunities for technology-enabled social networks to facilitate social support around health issues (Bernhardt, Mays, & Kreuter, 2011; Hesse et al., 2011; Roblin, 2011). Among adults over age 50 years (the age at which routine colorectal cancer screening is first recommended) the internet is playing an increasingly important role in social network communication (Brenner, 2013; Chou, Hunt, Beckjord, Moser, & Hesse, 2009; Fox, 2011; Madden, 2010; Zickuhr & Madden, 2012). Americans over age 50 turn frequently to family and friends for information on CRC screening and some are already communicating via email or social media about these and other screening tests (De la Torre-Diez, Diaz-Pernas, & Anton-Rodriguez, 2012; Hoffman et al., 2010). In addition, increased use of mobile handheld devices nationwide has narrowed the digital divide for some racial groups, allowing those conducting online health interventions a greater opportunity to access previously difficult -to-reach populations (Zickuhr & Smith, 2012).

While email communication may not be viewed as a traditional means of communicating social support for engaging in health-related behaviors, it may offer several advantages in promoting discussion of a topic viewed by many as sensitive and uncomfortable. Sproull and Kiesler (1991) describe the “feeling of privacy” created by email communication, finding that respondents to an email interview were more willing to disclose information than they might be when asked in face-to-face interviews or on paper questionnaires. Today, with the ubiquitous use of email and social media (Brenner, 2013; Chou et al., 2009; Fox, 2011; Madden, 2010; Zickuhr & Madden, 2012), inviting people to forward an email is asking of them a relatively small effort if they are motivated to perform the action, particularly if those they are forwarding to are social network members with whom they already routinely communicate online (and can therefore reach via just a few clicks).

Research Questions

This paper addresses three main research questions. First, we asked whether lay people (when invited) would modify and personalize a peer-directed message in which they share that they have been screened for CRC and promote screening in message recipients. We then asked whether the PHM framework and social support theory would assist in our understanding of the message modifications made by lay people. Finally, we asked whether participants would express willingness to send their modified messages, via email or postcard.

Methods

Study Population and Setting

This study was conducted within the HMO Cancer Research Network (CRN) which consists of the research programs, enrollee populations and databases of 14 HMO members of the HMO Research Network. The overall goal of the CRN is to conduct collaborative research to determine the effectiveness of preventive, curative and supportive interventions for major cancers among diverse populations and health systems. The 14 health plans, with nearly 11 million enrollees, are distinguished by their longstanding commitment to prevention and research, and collaboration among themselves and with affiliated academic institutions. The CRN is funded by the National Cancer Institute. Participants were recruited from three CRN health plans: Kaiser Permanente Georgia (KPGA), Kaiser Permanente Hawaii (KPHI), and Fallon Community Health Plan (FCHP). This study was reviewed and approved by the Institutional Review Boards at each of the health plans.

Participants in the present study had previously completed a two-hour study session for a larger study focused on health literacy and communication of cancer information (Mazor et al., 2012a; Mazor et al., 2012b). One CRN site -Kaiser Permanente Colorado (KPCO)- participated in the previous larger study but not in the present study. All participants were aged 40 to 70 at the time of recruitment for the larger study (some were 71 by the time the interviews occurred), all had been a member of one of the participating health plans for a minimum of 5 years, were able to understand English, and had no physical or mental limitation that would preclude participating in a two-hour in-person interview. We targeted this age range because these adults are most likely to face cancer screening decisions, and to be at elevated risk for most cancers compared to younger adults. To optimize sampling across educational levels, at FCHP, KPGA and KPHI, sampling was stratified by United States Census-based estimates of educational level defined by the percentage of residents with a high school education or less in the census tract in which participants lived. At KPGA, sampling was further stratified according to the percent of African-American residents, to ensure that African-American and white members were invited in equal numbers within each educational strata. A variety of recruitment techniques were used, including mailings, telephone follow-up, and offering sessions at multiple locations. Interested participants were screened to confirm ability to communicate in English, adequate corrected hearing and vision, and the absence of physical or psychological limitations that would preclude participation.

Study sessions lasted approximately 2 hours, and were conducted in-person by a trained research assistant. All items (except reading items) were administered orally. A total of 1074 participants completed interviews between 06/22/2009 to 04/19/2010.

For the present study, 3 sites participated (KPGA, KPHI, FCHP). Seven-hundred eighty-nine participants from the initial study were contacted by mail; approximately one week later, individuals who did not respond were contacted via telephone to again extend the invitation to participate. Four hundred thirty-eight (56% of the 789 people invited) agreed to participate. For budgetary reasons, we were able to recruit participants from FCHP more aggressively and these participants made up a higher proportion of this current study population (46.3% of the present study sample was from FCHP as compared to 28.9% of the previous larger study). This higher proportion of FCHP participants resulted in a higher proportion of white participants. There were no significant differences in age, educational level, health literacy scores, numeracy scores or self-reported health status for current study participants from the 3 sites as compared to previous participants at these 3 sites. Interviews were conducted for the present study between 08/04/2011 and 01/27/2012. Sessions lasted approximately 1 to 1.5 hours.

Data Collection

Four hundred thirty-eight participants completed in-person interviews for the current study; 387 (88.4%) reported ever having used email. Responses from these 387 email users are reported here. Sociodemographic data and self-reported health variables were also collected (Table 1).

In order to explore the role of user-generated content, participants were provided with the following hypothetical situation:

> "Imagine that you completed colon cancer screening. Everything went OK and your results were fine. The doctor asked you to help educate friends and family members over age 50 about colon cancer screening. We are trying to design a message to be sent out by people who have completed colonoscopies, so that they can explain to friends and family why screening is important. Please help us design a message you'd be willing to pass along to friends and family members over age 50."

We then provided participants with a sheet of paper on which a sample message was printed (Appendix A). In this, the sender shares the fact that he or she has completed a colonoscopy and urges hypothetical message recipients to discuss CRC screening with their doctor. Following the Persuasive Health Message (PHM) framework described above, we included in the message 4 'constant components'. These included identification of a *threat* ("Colon cancer is expected to kill over 50,000 people in 2011); statement of screening *effectiveness* ("Screening can stop colon cancer before it starts, or catch it early when it's likely to be easier to treat") and references to the sender's own experience ("I just got a colonoscopy") as a means of enhancing a sense of *self-efficacy*. *Cues* included the peer-to-peer relationship between the would-be sender and recipient as well as sender-created subject headings. *Targeting to the specific audience* was initiated through the statement "my doctor is asking me to pass this message along to people over age 50 who I know and care about," with the expectation of further targeting through sender edits. We encouraged participants to edit the message as they wished, then asked whether they would be willing (yes/no) to send the edited message to friends and family by either email or postcard. No messages were actually sent.

Because email subject lines play a role in the decision to open or delete an email message (Phelps, Lewis, Mobilio, Perry & Raman, 2004), those who indicated they would send via email were asked to verbally suggest an email subject line that would “make your family and friends likely to open up the email,” and responses were transcribed.

Participants were also provided with shorter messages which referenced: (a) three alternative screening methods (colonoscopy, sigmoidoscopy, and stool testing) and (b) five different versions of a message promoting CRC screening (Table 2). Participants were asked to rate the acceptability of each message on a 3-point scale, (1=“I would never email this to anyone”; 2=I might email this; 3=I would be willing to email this”). In each case, participants were asked to imagine they had completed the test described, and that the results were “fine.”

Analysis

Responses from participants who indicated that they would be willing to send an edited message via email were included in a content analysis of subject lines and edited messages. Subject lines were reviewed in an iterative fashion; themes were identified; and subject lines were classified by theme (Table 3). Subject lines could be coded as containing more than one theme.

Edited messages were analyzed in sections (Table 4). For each sentence, we quantified: (1) the number of people who deleted the entire sentence, and (2) the number who modified the sentence by adding, deleting or rearranging words. Modifications were reviewed in an iterative fashion in order to identify predominant themes and changes were categorized by two raters. For this categorization, we were informed broadly by the PHM framework, reviewing edits for modifications to (1) the *threat* message; (2) the *efficacy* message; (3) the use of various *cues* and (4) the methods used to *target a specific audience*. We were also informed by theories of social support (House, 1981) in which 4 categories of social support (informational, emotional, instrumental and appraisal) are identified. While both of these theories informed our review, we also sought to identify themes that emerged out of the data in ways that might not fit into a categorization scheme strictly based on these theories.

Each edited message was also coded by both raters based on whether (a) the intended meaning was conveyed and (b) the message edits resulted in a factually inaccurate message. In addition, two authors independently coded 10% of the edited sections. Factual accuracy was determined by physician review. Where authors differed on coding, they met and discussed to reach consensus.

Results

Sociodemographic characteristics of participants are presented in Table 1. Most participants (86.8%) reported having completed some type of CRC screening, with 71.6% of all participants reporting having had a colonoscopy at some point in the past.

When asked how willing they would be to pass along short CRC screening messages without the option to edit, the majority (54.3%) reported willingness to email a sentence in which the writer states he or she has just completed a colonoscopy (Table 2). Only one third were willing to share with others that they had completed stool testing. Given the option to edit, three-quarters(74.4%) of participants indicated they would be willing to forward their edited message promoting CRC screening via email and 11.6% were willing to forward via postcard. Only 12.9% were unwilling to forward an edited message (Table 1).

We examined whether willingness to pass along edited messages was associated with having a history of CRC in oneself, in a first degree family member, or in a member of one's social network. Only 3 participants reported a personal history of CRC and an additional person was unsure; all 4 of these participants reported willingness to pass along the message. There were 51 participants (11.7%) who had a first degree relative diagnosed with CRC (8 participants were unsure). All but 2 of those with a first degree relative (96.1%) and 8 of the 9 unsure reported willingness to pass along messages. Close to one-third (31%; 135 participants) knew someone within their social network who had been diagnosed. Rates of willingness to pass along messages among this group were also high: 123 of the 135 (91.1% of the group) were willing to pass along messages. While high, rates of willingness for groups affected either personally or through family or network members did not differ significantly from rates of willingness in unaffected participants.

Suggested email subject lines most often referenced personal connections or caring sentiments (50.3%), cancer or colonoscopies (40.3%), general health or testing (26.7%) or urgency (20.1%) (Table 3). Subject lines using words with frightening or negative connotations such as ”death” or ”die” were rarely used (2.8%).

Review of changes made to the CRC message showed that, of those who indicated they would be willing to pass along an edited email message, over one-third (36.5%) were willing to forward the original message unchanged. Close to two-thirds (63.5%) made at least one change to the message.

Common modifications included changes to the level of personalization, with 15.6% of participants reframing or increasing the personal nature of the message (e.g., adding ‘because I love you’ to the end of the first sentence), expressing *emotional support* and potentially enhancing the message's ability to act as a *cue*. Four individuals went in the opposite direction, deleting personalizing words (e.g., removing “who I know and care about” from the first sentence). Twenty-five people (8.7%) added personal testimony (e.g., “It's really not that bad”) while others (4.9%) opted not to use the word “happy” to express their attitude toward sharing personal experience (i.e., in the sentence “if you want I'd be happy to talk to you about what my experience was like,” they changed “happy” to “willing”). In a few cases, assistance was offered beyond that of sharing experience (e.g.,”I'll be your driver,” an expression of *instrumental support*).

The sentence most frequently deleted (Table 4) was the *threat* message, a negatively framed fact describing the expected impact of colon cancer (i.e., Colon cancer is expected to kill over 50,000 people in 2011). In addition to those participants who deleted this sentence entirely, some (4.5%) opted to keep the sentence but deleted the word ‘kill,’ usually substituting alternatives such as ‘affect’ or re-ordering the sentence to be able to say people would die. In addition, 3.8% of individuals deleted the number, (i.e., changing “Colon cancer is expected to kill over 50,000 people in 2011” to “Colon cancer can kill people”). Some added comments directly after this sentence, enhancing the *efficacy* message (for example, encouraging readers not to be part of that statistic as in “You don’t have to be one of them!”) or expressing a presumed empathy with the potential message recipient (e.g. “Let’s know what’s there together”).

Message edits also included addition of words conveying emphasis or urgency, description of non-colonoscopy screening options and opinions on which screening modality was best (provision of informational support). Humor or use of colloquialism or emoticons were other techniques employed (e.g. “The prep took longer than expected, (you know I’m full of it! ☺”). In some cases (4.9%), participants avoided asking, ‘have you had your screening’ and instead created a conditional statement in which they said, ‘if you have not been screened, please consider…’ In this way, provision of *appraisal support* was retained but rephrased as a less direct inquiry.

As shown in Table 4, 5.6% of participants suggested changes that altered the main intended meaning of the message. Only five participants introduced factual inaccuracies.

Two authors independently coded 10% of edited sections. There were 41 sections rated and 171 characteristics were coded. There were 13 disagreements in total resulting in a rate of agreement of 92%.

Discussion

Adults in this study thoughtfully edited and then expressed willingness to send peer-directed messages in which they referenced their own CRC screening experience and promoted screening in others. Most participants were also willing to pass along simple screening messages without an option to edit. The PHM framework and the theory of social support provided informative models for our initial understanding of lay modifications to peer-directed CRC screening messages. Using the PHM framework, we identified mixed reactions to the *threat* message (a frightening CRC statistic). We also found that many edited messages emphasized personal connections either in the subject heading or in the body of the text, and were able to interpret these changes both as *cues* (within the PHM framework) and as expressions of *emotional support*.

The varied reactions to a sentence relying on a frightening colorectal cancer statistic may reflect participant concern about evoking defensive or negative responses in recipients (Witte &Allen, 2000). In future interventions, coupling a *threat* message component with options for editing or deleting this portion of the text might allow senders to create messages that they view as acceptable to recipients and might increase the likelihood that the message will be transmitted. Further studies are necessary to expand upon this hypothesis.

Personal connections were frequently emphasized by participants. Almost all those who expressed willingness to send messages opted to keep in the message the information that they themselves were screened. These *cues* may serve to enhance recipients' personal identification with content. In addition, by extending the invitation to discuss screening further (retained in over 90% of edited messages), the senders convey the promise of a future conversation addressing colorectal cancer screening (and possibly future opportunities for social support). Narrative communication has been identified as an important tool for cancer prevention and control (Kreuter et al., 2007). Without interviewing message recipients, we cannot confirm this interpretation, nor can we know to what extent a peer message might prompt offline CRC screening conversations. Further studies focused on reactions and message recipient behavior are therefore necessary.

Given that we were asking lay participants not only to promote CRC screening but also to create a message they were willing personally to pass along, our exploratory approach to the analysis raised several additional points not emphasized by the PHM and social support models.

In this study, message modifications provide insight not only into characteristics of the intended target audience but also into the perceptions (and hesitations) of the lay person expressing willingness to send. A health communicator drafting a public message needs to consider the reputation of his or her institution as the message is drafted and disseminated, but may be less likely to make choices of language and content based on embarrassment, concerns over personal revelation or considerations of personal relationships. When inviting a lay participant to modify, transmit and be the source of a health-related message, his (or her) assessment of what would be acceptable to send may impact the message's persuasiveness either in a positive or negative way. An optimal message to be used in a peer-to-peer intervention must therefore balance persuading the recipient with acceptability to the sender.

In addition, professional training and a longer amount of time may allow a health communicator greater assurance of factual accuracy. As would likely be the case if participants were asked to modify messages on their own, our participants spent minutes, not days or weeks; we would not expect participants to invest a great deal of time researching facts for their modifications and in this study they were not offered the opportunity to look up information. Despite these restrictions, we were encouraged to find that the vast majority of messages in our study conveyed the originally intended meaning and very few contained factual inaccuracies. A modifiable message to be used in a peer-to-peer intervention must consider fidelity to the original meaning and need for factual accuracy; combining modifiable and unmodifiable components in an email message may be one approach worth exploring further.

Future studies may also wish to explore whether messages are more effectively tailored if edited by a peer who knows the personal preferences and habits of the message recipient as compared to a professional health communicator.

Our study has several limitations. We used a hypothetical situation to induce user-generated content which may not be reflective of real-world situations. Reported willingness to edit and transmit an email message may therefore not be realized in practice. CRC screening is generally seen as a desirable behavior that should be promoted. Participants' willingness to personalize and self-report willingness to pass messages on to social contacts could in part be influenced by social desirability. The sample represents adult members of integrated healthcare delivery systems who may not be representative of the general population. The high proportion of participants expressing willingness to edit and transmit messages (and the low percentage of factual inaccuracies) may not therefore be fully generalizable to other insured or uninsured populations. Another important consideration is that, although studies support the influence of interpersonal relationships in determining spread of health-related behaviors in a social network (Christakis & Fowler, 2008; Strully et al., 2012), it is also possible that such relationships might inhibit senders who are reluctant to appear intrusive or dictatorial.

In conclusion, email messages with modifiable text may offer an inexpensive and acceptable way for screened individuals to promote colorectal cancer screening to members of their social network. Choices made by message senders when editing sample text for such messages may provide valuable insights into the way colorectal cancer screening is viewed and discussed within a social network. Further study is necessary to understand whether personalized messages crafted by a friend or family member are an effective way to increase screening rates among otherwise hard-to-reach populations, and whether they consistently provide medically accurate information.

Appendix A: Message template

Hi, my doctor is asking me to pass this message along to people over age 50 who I know and care about, and I wanted to share it with you.

Colon cancer is expected to kill over 50,000 people in 2011.

Screening can stop colon cancer before it starts, or catch it carly when it's likely to be easier to treat.

Everyone over age 50 should be screened.

There are a few ways to get screened for colon cancer. I just got a colonoscopy (which is one way to get screened).

If you want I'd be happy to talk to you about what my experience was like.

Have you had your screening done yet? If not, please consider talking to your doctor about screening options for colon cancer.

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Table 1

Characteristics of study participants, gathered via in-person interviews 2011-2012.[*]

Characteristic		**Total Sample**	
		n	**%**
Study Sample	Those who use email	387	100.0
Study Site	Georgia Hawaii Massachusetts	120 100 167	31.0 25.8 43.2
Race/Ethnicity	Black/African American Asian/Pacific Islander/Native Hawaiian White/Caucasian Other or Unknown/Not Reported	59 50 240 35	15.2 12.9 62.0 9.0
Language Spoken at Home	English English and Other Other	371 6 7	95.9 1.6 1.8
Education	1)< High School/HS Graduate (incl. tech training) 2) Some College/Assoc/Bach/Grad Degree	72 312	18.6 80.6
Age	40-49 years 50-59 years 60 years and up	49 144 194	12.7 37.2 50.1
Gender	Male Female	162 225	41.9 58.1
Marital Status	Married Unmarried	248 136	64.1 35.1
Work Status	Working for pay Retired Disabled Other	247 101 10 26	63.8 26.1 2.6 6.7
Self-reported Health Status	excellent/very good; good/fair/poor	240 147	62.0 38.0
Number of Comorbidities	0/1 2+	305 79	78.8 20.4
Worry about Getting Cancer	All the time, Often Sometimes, Rarely or Never	51 334	13.2 86.3
Doctor ever recommended that you be screened for CRC cancer	Yes No	338 44	87.3 11.4
Ever had a colonoscopy (self-report)	Yes No	277 104	71.6 26.9
[*]If never had colonoscopy, ever had any other type of CRC screening (self-report)	Yes No [*](n=100)	59 41	59.0 41.0
Completed any type of CRC screening (self-report)	Yes No	336 45	86.8 11.6
Ever diagnosed with CRC	Yes No Not sure	3 433 1	.7 99.1 .2
1st degree relative ever diagnosed with CRC	Yes No Not Sure	51 377 9	11.7 86.3 2.1
Anyone within social network ever diagnosed with CRC	Yes No Refused to answer	135 300 1	31.0 68.8 .2

Characteristic		**Total Sample**	
		n	**%**
Would forward edited message	By email By postcard only No	288 45 50	74.4 11.6 12.9

[*] All participants insured at time of interview by one of three health plans: Kaiser Permanente Georgia, Kaiser Permanente Hawaii, or Fallon Community Health plan.

Table 2

Willingness to email pre-written messages promoting colorectal cancer screening (n=387; those who report using email).

Pre-written Message	**I would be willing to email this**		**I might email this**		**I would never email this**	
	n	**%**	**n**	**%**	**n**	**%**
I just got a colonoscopy.	210	54.3	86	22.2	88	22.7
I just got a sigmoidoscopy.	186	47.9	90	23.2	106	27.4
I just completed a test that checks my stool for blood.	128	33.1	95	24.5	159	41.1
My doctor just told me colon cancer can be prevented and that everyone over age 50 should be screened. Have you done your screening?	232	59.9	89	23.0	63	16.3
My doctor just told me colon cancer can be prevented and that everyone over age 50 should be screened. I just got screened – so should you!	214	55.3	82	21.2	88	22.7
My doctor just told me that everyone over age 50 should be screened for colon cancer. There are several ways to do your screening. Consider talking to your doctor about this if you haven’t already.	220	56.8	88	22.7	72	18.6
My doctor asked me to pass this message along. I just got my colonoscopy. Have you done yours?	206	53.2	91	23.5	84	21.7
I just got a colonoscopy. Glad it’s done, not something I want to do again for a while but I feel really proud of myself for taking charge of my health and doing something I’ve been putting off for a while. You should do it too!	201	51.9	94	24.3	89	23.0

Table 3

Email messages promoting colorectal cancer screening to peers: Subject lines provided by study participants.

Tailoring Category[a]	**Description**	**N**[b]	**%**	**Examples**
	Total Sample (those willing to forward edited email message)	**288**	**100.0**	
Personal connection, caring, inclusion of names	• Uses connecting words: please, care • Describes relationship: mother, daughter, friend • Uses pronouns • Includes sender's or recipient's name in subject line • Reference to love, caring	145	50.3	"Take care of you" "Your mother says, Do This!" "Words of wisdom from[Name]" "I love you and I want you to stay here on earth with me."
Colonoscopy	• Reference to Colonoscopy, Cancer, Colon, Screening	116	40.3	"What you need to know about colonoscopy"
Health, Testing	• References to general health/risk/prevention/medical • Mention of either "test" or "check"	77	26.7	"Stay In Good Health!" "I just got checked…how about you?"
Urgency	• Uses words to convey urgency	58	20.1	"Please open, this might save your life" "URGENT!"
Sender's or Recipient's Experience	• Shares sender's experience • Reference to recipient's experience ('have you had a colonoscopy,' 'have you had yours')	51	17.7	"My experience with Colonoscopy" "Have You Been Screened For Colon Cancer?" "Did You Have Your Colonoscopy Yet?"
Humor or Profanity	• Uses jokes, emoticons, sarcasm • Uses profanity	31	10.8	"Have You Talked to your Colon Lately? News from 'Colon Central' :)" "Bottoms up!" "Colonoscopy is fun." "Butt stops here."
Life	• Reference to having recipient around/living longer/saving life/'your life'	29	10.1	"This Could Save Your Life" "Things to help your health I'd like to have you around for a while."
Age	• Reference to age, either sender, recipient or general population	16	5.6	"Happy 50th Birthday! Have you scheduled your colon cancer screening done yet?"
Scary	• Uses frightening words: death, die, kill	8	2.8	"Please Don't Die Need you to do your colon screening" "Do or Die"
Other		22	7.6	"FYI" "Some news for you"

[a] Categories are not mutually exclusive

[b] Participants choosing this tailoring approach

Table 4

A personal message promoting colorectal cancer (CRC) screening within a social network: Suggested edits provided by study participants (n=288; those who report using email and would send the edited message via email).

Original Wording	**Deleted Entire Sentence**		**Edited Sentence**		***Intended meaning of sentence(s)***	**Edits altered meaning**	
	n	**%**	**n**	**%**		**n**	**%**
Hi, my doctor is asking me to pass this message along to people over age 50 who I know and care about, and I wanted to share it with you.	6	2.1	21	7.3	*I was asked to pass this message to you.*	1	0.3
Colon cancer is expected to kill over 50,000 people in 2011.	51	17.7	50	17.4	*Colon cancer is harmful.*	2	0.7
Screening can stop colon cancer before it starts, or catch it early when it's likely to be easier to treat.	8	2.8	32	11.1	*Screening can prevent Colon cancer.*	0	0.0
Everyone over age 50 should be screened.	19	6.6	37	12.8	*There is a specific group of people (50+ or 'you') that should be screened.*	1	0.3
There are a few ways to get screened for colon cancer.	15	5.2	3	1.0	*There's more than one way to get screened.*	0	0.0
I just got a colonoscopy, (which is one way to get screened.)	11	3.8	47	16.3	*I got screened.*	3	1.0
If you want I'd be happy to talk to you about what my experience was like.	19	6.6	37	12.8	*I am open to discussing this.*	3	1.0
Have you had your screening done yet? If not, please consider talking to your doctor about screening options for colon cancer.	11	3.8	53	18.4	*Talk to your doctor about screening.*	7	2.4