



## Examples of Cancer Screening Promotion Education Activities

## CANCER SCREENING HEALTH PROMOTION ENVIRONMENTAL SCAN ACKNOWLEDGEMENTS

### Documents prepared by:

Seema M. Parmar, MHA, PhD(c), Health Promotion Associate  
Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs, Health Promotion

Rosanna Taylor, MSc. Health Promotion Research Associate  
Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs, Health Promotion

### Documents reviewed by:

Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs, Health Promotion

Alison Nelson, Manager

Monica Schwann, Acting Manager

Charlene Mo, Health Promotion Coordinator

Melissa Hyman, Health Promotion Coordinator

Carmen Webber, Health Promotion Coordinator, Screen Test

Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs

Dr. Huiming Yang, Director, Screening Programs

Dr. Laura McDougall, Medical Lead, Screening Programs

Krista Russell, Manager, ABCSP/ACCSP

MaryAnne Zupancic, Manager, ACRCSP

Brenda Lynch, Manager, Client Program Services

Germaeline van der Lee, Project Coordinator, ACRCSP

Maria Linehan, Project Coordinator, ABCSP/ACCSP

Tammy Burke, Program Assistant, ABCSP/ACCSP

Carolyn Dudley, Program Manager, EPICS, ABCSP/ACCSP

Dr. Lorraine Shack, Research Leader, Public Health Innovation and Decision Support

### Acknowledgements:

The authors gratefully acknowledge the following individuals and organizations for their contribution to the development of various elements of each of the environmental scan documents.

- Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs, Health Promotion  
(Alison Nelson, Monica Schwann, Charlene Mo, Melissa Hyman, Carmen Webber, Amy Williams, Teresa Earl)
- Alberta Health Services, Health Promotion, Disease and Injury Prevention, Screening Programs, Screening Programs  
(Dr. Huiming Yang, Dr. Laura McDougall, Krista Russell, MaryAnne Zupancic, Song Gao, Patricia Pelton)
- Alberta Health Services  
(Dr. Lisa Petermann, Dr. Lorraine Shack, Graham Petz, Brianne Lewis, Robyn Sachs, Jennifer Doole, Vicky Vu)
- Helix Designs (James Shrimpton)
- Palomino (Lucas Bombardier, Christina Almeida)

Suggested Citation:

Alberta Health Services (2010). Examples of Cancer Screening Promotion Education Activities. Calgary, Alberta: Alberta Health Services

This document is current as of December 30, 2010.

For a PDF version of this document, and more information on the environmental scan, please visit <http://www.screeningforlife.ca/healthpromotion>

# EXAMPLES OF CANCER SCREENING PROMOTION EDUCATION ACTIVITIES

---

- A. INTRODUCTION ..... 2
- B. MAILED INVITATION LETTERS ..... 2
  - Mailed invitation letters as a method to increase breast cancer screening rates ..... 3
  - Mailed invitation letters as a method to increase cervical cancer screening rates ..... 4
  - Mailed invitation letters as a method to increase colorectal cancer screening rates ..... 4
  - Tailoring or targeting invitation letters..... 5
- C. EDUCATION RESOURCES ..... 7
  - Information brochures ..... 7
  - Videos ..... 8
- D. EDUCATION ACTIVITIES ..... 9
  - Education sessions & counseling ..... 9
  - Community health workers..... 10
  - Media campaigns..... 13
  - Computer-based interventions..... 13
  - Healthcare provider education..... 14
- APPENDIX A: CANCER SCREENING HEALTH PROMOTION MODEL ..... 16
- APPENDIX B: LITERATURE REVIEW METHODS ..... 17
- REFERENCES ..... 19

## A. INTRODUCTION

Cancer screening health promotion interventions aim to negate factors that prevent cancer screening behaviour while reinforcing factors that initiate and maintain cancer screening behaviour. These factors, however, do not always work in isolation, which is why health promotion models encourage multi-strategy interventions that address multiple factors together.

The Cancer Screening Health Promotion (CSHP) model ([Appendix A](#)) includes five strategic activities used to promote breast, cervical, and colorectal cancer screening: Education & Resources, Social Marketing, Communication, Community Action, and Knowledge Management. A complete description of the CSHP model is provided in the document titled “Cancer Screening Health Promotion Model” available on [www.screeningforlife.ca/healthpromotion](http://www.screeningforlife.ca/healthpromotion). This document describes activities that fall within the Education and Resources category. Introductions to the other strategic activities are also available on [www.screeningforlife.ca/healthpromotion](http://www.screeningforlife.ca/healthpromotion).

This document provides specific examples of activities that fall under the Education and Resources category. These activities were mentioned most frequently in the peer-reviewed literature on interventions that promote breast, cervical, and colorectal cancer screening. A full description of the methods used to review the literature is available in [Appendix B](#). For the purposes of this review, only literature published between January 2003 and December 2010 were included. Consequently, this review does not include all of the evidence or examples of cancer screening promotion activities that is available, just what was published between January 2003 and December 2010. As well, this review does not include evaluation or impact assessments of the different activities. To include this would require limiting our review to only those studies that were able to assess impact and excluding many of the studies conducted by community groups without the resources to do a complete evaluation of their activities.

This document provides an overview of activities frequently used to promote cancer screening. Some suggestions of how to structure these activities are provided, however further research is necessary to determine details of how specific activities should be structured to maximize the impact on screening behaviour. As well, the effectiveness of different activities varies according to the target population. For program planners, the decision to use specific activities depends on a number of factors including characteristics of the target population, the specific factors associated with cancer screening that the activities address, and the resources available. We encourage program planners to implement their own evaluation frameworks to monitor the impact of their activities on screening behaviour in their target population.

## B. MAILED INVITATION LETTERS

**Mailed invitation letters** are often included as a component of population-based organized screening programs as a method for increasing screening rates in target populations. In the literature that was reviewed, mailed invitation letters were examined as a means of promoting screening for breast cancer alone<sup>1-8</sup>, breast and cervical cancer<sup>9,10</sup>, cervical cancer alone<sup>11-15</sup>, and colorectal cancer alone.<sup>16-25</sup>

## Mailed invitation letters as a method to increase breast cancer screening rates

Different studies reviewed found higher rates of mammography screening in groups that received a mailed invitation letter compared to groups receiving usual care, which did not include a mailed invitation letter or any other screening promotion strategy.<sup>2, 5, 7, 26</sup>

Robinson and colleagues (2007) found a mailed package including an invitation letter, information on breast health and mammography screening guidelines and a questionnaire on personal mammography screening history resulted in increased mammography screening for female hospital employees aged 40 years and older.<sup>7</sup> Slater and colleagues compared screening rates between low-income, underinsured women aged 40-64 years living in Minnesota who received a mailed invitation, a mailed invitation plus a monetary incentive, and women who received usual care (no mailed invitation or monetary incentive). Screening rates were significantly higher for women who received the mailed invitation letters than for women in the control group receiving usual care. Screening rates for women who received the mailed invitation letter plus the monetary incentive were significantly higher than screening rates for women who received only a mailed invitation letter.<sup>5</sup> Partin and colleagues (2005) found that mailed invitations resulted in higher repeat screens for women who had previously had a mammogram. Compared to a control group (no mailings), repeat screening was higher among women who received multiple mailings including thank-you cards, newsletters, and reminders at 15 months, 18 months, and 24 months post-intervention. At 18 months post-intervention, repeat screening was also higher among women who received a single mailed invitation letter than women in the control group.<sup>26</sup>

The impact of mailed invitation letters can be enhanced by combining the letters with mailed or telephone reminders, or telephone or in-person counseling. Champion and colleagues (2003) found that a mailed invitation letter from a physician with or without telephone and in-person counseling effectively increased mammography screening among non-adherent older women who were not thinking about getting a mammogram. However, combining the letter with in-person physician counseling was more effective at increasing screening than a letter alone or a telephone invitation alone.<sup>2</sup> Valanis and colleagues (2003) found that mailed letters with motivational telephone interviews resulted in increased screening for both breast and cervical cancer compared to motivational in-person interviews alone or usual care (no screening promotion intervention).<sup>10</sup> Saywell and colleagues (2004) also found that a combined mailed invitation and telephone follow-up intervention resulted in a greater increase in mammography screening than a telephone invitation alone, a mailed invitation alone, or usual care (no invitation); however, the mailed invitation alone was the most cost-effective.<sup>3</sup> Additionally, Bowen and Powers (2010) found that women who received both letters and phone calls (and follow-up counseling for high-risk individuals, as needed) significantly increased screening mammography uptake. In certain hard-to-reach populations, however, a mailed invitation alone may not have an impact on breast cancer screening rates. West and colleagues (2004) found that a mailed invitation letter alone did not significantly increase mammography screening rates in older, low-income, rural African-American women who were overdue for screening. Telephone counseling following the mailed invitation letter did significantly increase screening rates for women in this study who had never had a mammogram.<sup>4</sup> As well, a few of the studies reviewed found that a telephone invitation alone was more effective at increasing breast cancer screening than a mailed invitation alone.<sup>1, 6, 27</sup> Luckmann and colleagues (2003) found that mammography screening rates were higher among women 50-80 years belonging to two different Health Maintenance Organizations

(HMOs) who received telephone counseling than women 50-80 years from the same HMOs who only received a mailed invitation letter.<sup>1</sup> Carney and colleagues (2005) also found that women who received a telephone invitation for screening were more likely to get screened than women who received a mailed invitation. Over time, however, the difference in screening rates between those who received a telephone invitation and those who received a mailed invitation became insignificant.<sup>6</sup> Goel and colleagues (2008) found that for women who have previously received screening mammograms, a telephone call reminding women that they were due for screening was more effective at promoting repeat screening than usual care, which included a mailed postcard reminder.<sup>27</sup>

### Mailed invitation letters as a method to increase cervical cancer screening rates

Cervical cancer screening rates were increased using mailed invitation letters in a large population-based study in Belgium<sup>11</sup> and a smaller study of female family members of patients admitted to a teaching hospital in Taiwan.<sup>15</sup> Eaker and colleagues (2004) found that combining mailed invitation letters with mailed reminder letters or telephone reminders significantly increased cervical cancer screening rates<sup>14</sup>. Oscarsson and colleagues (2007) also found that cervical cancer screening rates were higher among women who received mailed invitations followed by telephone counseling and assistance making screening appointments than women in a control group receiving usual care (no invitation or counseling). However, the authors of the study suggested that the intervention was not cost-effective, especially given that screening rates in the study population were already quite high.<sup>12</sup>

Neither mailed nor telephone invitations may influence screening of women who have not been screened for many years. In a study with 1,140 Australian women who had not had a Pap test in the previous 15 years, screening rates were not impacted by a telephone call from a nurse, a letter from a celebrity, nor a letter from the National Health Services Cervical Screening Commissioner. Moreover, the study found the telephone intervention was the most expensive and excluded women whose phone numbers were unlisted.<sup>13</sup>

### Mailed invitation letters as a method to increase colorectal cancer screening rates

Studies have found that mailed packages (including invitation letter, information booklets, home stool test kit, and a reminder letter) with or without a telephone reminder significantly increased colorectal cancer screening in comparison to usual care (no mailings or telephone calls).<sup>19, 21</sup> Additionally, invitation letters are a cost-effective approach to improve rates of colorectal cancer screening.<sup>25</sup>

Church and colleagues (2004) found that self-reported colorectal screening, in particular FOBT screening, was highest among men and women receiving a mailed FOBT kit with a reminder letter, followed by the group receiving a mailed FOBT kit alone without a reminder, and was lowest in the group that received usual care (no mailed FOBT kit or reminder).<sup>28</sup> However, Walsh and colleagues (2005) found that over a five year period, a mailed package (including a physician's letter, information brochure, and FOBT cards) significantly increased screening rates using flexible sigmoidoscopy, but had no effect on FOBT or colonoscopy screening rates.<sup>23</sup> An option for cutting costs is to send reminder letters to all individuals overdue for screening and FOBT kits only to

those who request them; however, this may result in lower screening participation than if all individuals who are overdue for screening are sent a reminder letter and a FOBT kit.<sup>29</sup> Using established networks (such as current breast and cervical cancer screening programs) to reach un-screened and under-screened individuals, as done by Miesfeldt and colleagues (2010), is a resourceful way to increase colorectal cancer screening.<sup>24</sup>

As is the case with breast and cervical cancer screening, mailed invitation letters alone may not effectively increase screening rates in certain populations. In a population that was predominantly African-American, a telephone invitation alone was more effective at increasing colorectal cancer screening rates than a mailed invitation alone.<sup>18</sup> Percac-Lima and colleagues (2009) found that colorectal cancer screening through colonoscopy was increased in low-income, non-English speaking individuals by mailing an invitation letter with educational material, followed by telephone or in-person contact with someone who could speak their language and assist them with accessing screening services.<sup>17</sup>

As well, physicians play a key role in identifying eligible patients and recommending colorectal cancer screening. In a study of 22 family medicine practices in New Jersey and Pennsylvania, colorectal screening rates were higher in practices that had either telephone or mail reminder systems and had staff available to provide patients with health behaviour and education counseling.<sup>30</sup> Sequist and colleagues (2009) found that providing physicians with electronic reminders during patient visits in addition to mailing packages to patients increased screening using FOBT cards. However, this was only effective at increasing screening in patients who frequently visited their physician.<sup>31</sup> Ling and colleague (2009) found that enhancing office and patient management systems to provide additional support for colorectal cancer screening significantly improved colorectal cancer screening adherence.<sup>22</sup>

## Tailoring or targeting invitation letters

A response to an invitation letter is largely influenced by the content within the letter. A number of studies include tailored<sup>1, 3, 4, 9, 10, 16-19, 21, 22</sup> and/or targeted<sup>19, 21</sup> mailed invitation letters. *Tailoring* means the information provided in the message addresses characteristics about the individual that influence the health behaviour or outcome.<sup>32</sup> Usually, these characteristics are measured through a formal assessment such as a survey or interview. The assessment can measure personal characteristics based on theoretical models such as perceived barriers, benefits, severity, and susceptibility taken from the Health Belief Model<sup>33</sup> or stages of change including pre-contemplation, contemplation, and preparation stages from the Stages of Change Model.<sup>34</sup> As well, the assessment can examine knowledge, attitudes, barriers to screening, and other determinants of screening behaviour. The information provided in the letters can then be tailored to address these determinants. The more detailed the assessment, the more the message can be tailored. *Targeting* refers to the information provided in the message being directed at a defined group of individuals within the population and addressing characteristics that are similar or shared by the members of this group.<sup>32</sup> Targeting messages do not require an assessment of characteristics. The messages reflect known characteristics of the target population such as spiritual or cultural values. Targeted messages may also include picture, symbols, or language that represents the population.

There are three factors that can influence the decision to use tailoring or targeting, and the extent to which tailoring or targeting is used.<sup>35</sup> The first factor is the variability within the target population concerning the specific factors associated with screening (See document titled “Factors

associated with breast, cervical, and colorectal cancer screening” available on [www.screeningforlife.ca/healthpromotion](http://www.screeningforlife.ca/healthpromotion)). Tailoring is most beneficial if the factors associated with screening are different for different members of the target population. If there is little difference among members of the target population, a targeted intervention that addresses screening more broadly may be sufficient.<sup>35</sup> The second factor is the ability to gather data from the target population on factors associated with screening. Tailoring requires a mechanism of assessing the factors that influence screening in the target population in order to provide tailored messages. Targeting, however, does not require this type of mechanism.<sup>35</sup> Regardless, knowledge of the target population and factors associated with screening is necessary for both tailoring and targeting and increases the extent to which messages can be tailored or targeted. The third factor is the level of awareness and understanding of the problem in the target population. For example if awareness and understanding of cancer screening is low in the target population, individuals will have difficulties answering questions that assess why they are or are not screened. In these situations, targeted interventions that increase knowledge and awareness of screening may be more appropriate.<sup>35</sup>

The benefits of tailoring or targeting invitation letters are unclear and may differ according to the methods of tailoring or targeting and the characteristics of the target population. A study with 1,574 low-income African-American, Mexican-American and non-Hispanic white women in the United States found that personalized invitation letters with general information on breast and cervical cancer screening increased breast and cervical cancer screening significantly more than tailored personalized invitation letters with references to the recipients individual cancer risk factors, particularly among non-Hispanic white women.<sup>9</sup> Another study found no difference in colorectal cancer screening rates between groups receiving a targeted mail package (including an invitation letter, information booklet, stool kit, and reminder letter), a group receiving a tailored mail package (including everything in the targeted package plus tailored information pages), and a group receiving a tailored mail package plus a telephone reminder. However, screening rates were significantly higher in all of the intervention groups than a control group receiving usual care.<sup>21</sup> A study comparing similar interventions, which also examined cost-effectiveness, found that a tailored letter followed by a telephone reminder was most effective at increasing colorectal cancer screening rates, however, the targeted package without the tailored messages and telephone reminder was the most cost-effective.<sup>19</sup>

### Mailed invitation and/or reminder letters

Mailed invitation letters for screening are a potentially cost-effective method of increasing overall screening rates. The aim of a letter is to address an individual's lack of knowledge and negative perceptions regarding screening. The success of an invitation letter depends largely on the letter's content and how the letter addresses the specific needs of the target population. Though many studies have demonstrated success in improving screening rates with mailed invitation letters, other studies found invitation letters alone were not effective at increasing screening rates, especially when the baseline screening rates in a population are high. Invitation letters should be piloted with members of the target population prior to implementation. Targeting and/or tailoring invitation letters as well as combining the invitation letters with activities such as mailed or telephone reminders, in-person or telephone counseling, or mailed FOBT kits for colorectal cancer screening can increase the effectiveness of mailed invitation letters.

Note: Outdated addresses and telephone numbers can impede the success of activities that use mailings or telephone calls. As well, activities that are more intensive may be necessary for individuals in the population who do not prioritize screening and/or face significant obstacles such as perceived barriers, personal beliefs, self-efficacy, and language or access difficulties.

## C. EDUCATION RESOURCES

### Information brochures

**Information brochures** are a popular method for circulating information on various health topics. Information brochures have been used to address common barriers to mammography screening such as cost, fear, or lack of knowledge.<sup>36</sup> Information brochures are also useful if they provide decision-making information related to screening risks or outcomes.<sup>37</sup> Colonoscopy screening rates can be increased by mailing information brochures to patients who have been referred for colonoscopy by their physicians.<sup>38</sup> Information brochures alone, however, are not always effective. In a study promoting mammography screening, researchers created, piloted, and mailed a culturally appropriate information brochure to Korean-American women. The intervention resulted in a slight, non-significant increase in repeat screening. Only 32% of women recalled getting the brochure and 60% of women who were mailed a brochure stated that the address used by the study was incorrect.<sup>39</sup> Additionally, attention must be paid to the target population's readiness to receive information, as well as their education and literacy skills when designing brochures.<sup>40</sup>

Several studies examined screening promotion activities that include information brochures along with other activities such as the previously mentioned mailed invitation or reminder letters<sup>17, 19-21, 23, 41</sup>, education sessions<sup>42-44</sup>, videos<sup>45</sup>, telephone counseling<sup>46</sup>, and computer-based interventions.<sup>47, 48</sup> Information brochures made available in the language of the target population can help to increase knowledge, decrease barriers, and increase screening rates.<sup>49</sup>

### Information brochures

Information brochures can address various topics related to cancer screening knowledge, barriers, risks, and outcomes. Like invitation letters, information brochures can be tailored or targeted to meet the specific needs of a population. Information brochures are most effective if combined with other activities such as letters, videos, education sessions, or computer-based interventions.

### Videos

A small number of the studies reviewed explored the use of **videos** to promote cancer screening. The effect of videos on cancer screening behaviour varies depending on the target population, how the information is presented in the video, and if the video is combined with other cancer screening promotion activities.

A video promoting cancer screening can be developed for targeted populations using focus groups, which will help determine how best to address barriers to screening.<sup>50</sup> However, a video alone may not significantly affect screening rates. A video with information on colorectal cancer, early detection, and screening options mailed to primary care patients scheduled for a physical exam did not result in a significant increase in colorectal screening rates.<sup>51</sup>

Tailored or targeted videos may improve cancer screening knowledge and perceptions in different ethnic groups. A video for Chinese women, which included a segment in the form of a soap opera, followed by a segment with a physician's recommendation, significantly increased screening knowledge, intentions, perceived risk, and perceived benefits, and decreased perceived barriers.<sup>52</sup> Culturally tailored videos, also in the form of a soap opera, were created to promote mammography for low-literate Latino women<sup>53</sup> and cervical cancer screening for Thai women.<sup>54</sup> The effect of the video on screening behavior was not examined in any of the last three studies.

Interventions that use videos along with other activities may demonstrate even greater success in increasing screening behaviour compared with interventions that only use a video to promote cancer screening. A church-based intervention including a targeted video and tailored newsletters increased FOBT use among African-American members of 12 rural churches in North Carolina by 15%.<sup>16</sup> An intensive, culturally appropriate intervention for Chinese men and women which included counseling and education by an individual from their culture who spoke their language, FOBT cards and instructions, motivational and information pamphlets along with a video, resulted in more than a two-fold increase in FOBT screening compared to a control group receiving usual care.<sup>45</sup> Mammography screening increased in Hispanic women in Indiana who participated in culturally appropriate education sessions presented by Spanish-speaking female educators at community sites, using a Spanish language videotape.<sup>55</sup>

Two studies using video interventions examined the impact of different types of messages and scenarios. Neither found that the type of message or scenario affected screening. Grindel and colleagues (2004) found that, for African-American women the video's tone (positive/upbeat, neutral, or negative/fearful) had no apparent impact on knowledge, attitudes, and behaviour related to mammography screening.<sup>56</sup> Griffith and colleagues (2008) found that colorectal screening interest did not differ between adults who watched a video that included one man who

decided to be screened for colorectal cancer, another man who decided not to be screened and adults who watched a video that only included the man who decided to be screened.<sup>57</sup> Further research is necessary to understand which types of messages are most effective for different populations.

### Videos

Videos that promote cancer screening may be useful when targeting low-literate populations or specific cultures. For women, videos in the form of soap operas that cater to their language and culture can increase knowledge and change perceptions of cancer screening. As with all tailored and targeted interventions, videos should be piloted with members of the target population to assess the effect of the type of information and how the information is presented on screening knowledge, perceptions, and/or behaviour. Videos are most effective when combined with other cancer screening promotion activities such as tailored newsletter, pamphlets, education, and counseling.

## D. EDUCATION ACTIVITIES

### Education sessions & counseling

**Education sessions** conducted by providers and community members can increase knowledge and awareness of cancer screening. In the literature published since 2003, education sessions for breast and cervical cancer were conducted mostly for groups of potentially under- or un-screened women. An interactive education session with older Korean-American women increased breast cancer screening knowledge and self-efficacy and decreased negative perceptions of screening.<sup>58</sup> A small study with older lesbian women in San Francisco found that education sessions that included information on research relating lesbian status to cancer risk and conducted by a lesbian physician motivated non-adherent participants to obtain mammograms and pelvic exams.<sup>59</sup> Education sessions and Pap test clinics conducted by a nurse increased Pap testing among low-educated female prison inmates with long prison stays.<sup>60</sup> Worksite-based education sessions can also be an effective means of promoting colorectal cancer awareness, especially when delivered by County extension agents.<sup>61</sup>

Studies exploring colorectal and/or breast cancer screening education sessions targeted a variety of populations, including patients with health insurance,<sup>62</sup> African Americans,<sup>63</sup> Hmong-American men and women,<sup>64</sup> Korean-Americans<sup>65</sup> and Hispanics.<sup>66</sup> A study evaluating the effect of a public awareness campaign in Germany consisting of public information sessions and distribution of brochures on colorectal screening found that 8.7% of FOBT and 18.5% of colonoscopies performed during the follow-up period were attributed by patients to the campaign.<sup>43</sup> Two studies used the Health Belief Model to develop their educational sessions. In the first study, conducted with a small group of Caucasian men and women, colorectal cancer screening awareness increased most among men, smokers, and individuals with high school or less than high school education.<sup>67</sup> In the second study, education sessions conducted with a group of twenty employees enhanced understanding that colorectal cancer is preventable and resulted in improvements to all of the Health Belief Model constructs except perceived severity.<sup>68</sup> Another study used narratives to decrease perceived barriers to colorectal cancer screening.<sup>69</sup>

Education sessions are often conducted by healthcare providers including nurses and/or physicians, health educators, or community health workers (described below). Stokamer and colleagues (2005) found that patients receiving individual counseling from a nurse, instructions on use of the FOBT kit and a handout on colorectal cancer screening with the FOBT card were significantly more likely to return the card than individuals who just received the FOBT card with manufacturer's instructions.<sup>70</sup> Braun and colleagues (2005) found that improvements in colorectal screening knowledge, attitudes, intent, and practice were comparable among Native Hawaiian adults who participated in a culturally targeted education session by a non-Hawaiian nurse and Native Hawaiian adults who participated in a theory-based education session conducted by a Native Hawaiian physician and colorectal cancer survivor. However, the study was limited by the currently high colorectal screening rates among the participants.<sup>71</sup> Gorski (2009) found that face-to-face nurse-patient interaction using motivational interviews was an effective way to increase colorectal cancer screening.<sup>72</sup> and Byrne and RoblesRodriguez (2009) used educational parties, (facilitated by nurses) to successfully promote breast health awareness to under-screened women.<sup>73</sup> A study promoting breast self-examination education in China also used nurses as facilitators.<sup>74</sup> Additionally, educational sessions conducted by healthcare providers in concert with informational brochures, videos and counseling are very successful at increasing colorectal cancer screening, especially with targeted groups in their own communities.<sup>75</sup>

Education can also be provided during **counseling**. Telephone counseling can increase cancer screening rates, especially for patients who are able to receive counseling and support in their native language. Beach and colleagues (2007) found that telephone support provided by prevention care managers increased cancer screening rates, especially among Spanish-speaking women when they received support in Spanish.<sup>76</sup> Breast, cervical, and colorectal cancer screening increased more among patients who received telephone counseling from a prevention care manager than those patients who received usual care.<sup>77</sup> One study compared mammography screening rates among women receiving a telephone recommendation for breast cancer screening; a telephone recommendation for breast cancer screening followed by tailored counseling; and a control group of women who did not receive a telephone recommendation for screening or the tailored counseling. For women with very few barriers to screening, mammography screening was similar in all three groups. For women with barriers to screening, mammography screening was significantly higher in both of the groups who received the telephone messages compared with the control, and had the highest screening rates in the group when receiving the additional tailored counseling.<sup>78</sup>

### Education Sessions & Counseling

Education and counseling from providers or community health workers can increase awareness of breast, cervical, and colorectal cancer risk and screening options, counter negative perceptions of screening, and help individuals access screening services. Education sessions are most effective if targeting populations who lack cancer screening knowledge and awareness.

## Community health workers

**Community health workers** frequently conduct education sessions and provide counseling. Community health workers are community members who serve as a link between the community

and the health system.<sup>79</sup> In the literature, community health workers have various titles including home health educators<sup>80</sup>, bilingual outreach coordinators<sup>55</sup>, community health advisors<sup>81, 82</sup>, lay health workers<sup>83</sup>, lay health advisors<sup>16, 41, 80, 84</sup> and patient navigators.<sup>85-87</sup> For the purposes of this document, the term “community health worker” will be used to encompass all of these titles. Community health workers are laypersons recruited from the target community and trained to provide information and assistance to individuals who want to learn about health topics or who want to access health services. In the cancer screening literature, community health workers are especially effective when targeting specific ethnic groups, especially if the health workers speak the language and/or share the same culture as the target population.

In Latino communities, community health workers are often called “promotoras”<sup>42, 88, 89</sup> or “consejeras”.<sup>90</sup> As mentioned previously, an intervention with education sessions including a video presented by a Spanish-speaking female community health worker increased mammography screening among Hispanic women in Indiana.<sup>55</sup> In a Colorado study, Latino women who received a brochure in Spanish and personal education and counseling from a promotora demonstrated small, non-significant increases in mammography screening rates compared to women who only received the Spanish brochure.<sup>42</sup> An intervention that included community health advisors focusing on culturally appropriate education and social support for Latino women increased Pap testing and mammography screening, but not FOBT screening.<sup>91</sup> In North Carolina, a church-based study found that promotoras could significantly increase the likelihood of screening; however, additional efforts are necessary to ensure that all women are able to connect with a promotora.<sup>88</sup> Recently, Fernandez and colleagues (2009) found significantly higher Pap testing and mammography screening rates among low-income Hispanic women, 50 years or older, who were exposed to a lay health worker intervention compared with a control group who received usual care.<sup>92</sup> Breast and cervical cancer survivors may also serve as influential community health workers, encouraging their peers and contacts to obtain mammography and Pap tests.<sup>89</sup>

For African-American women, a church-based intervention including a group education session plus a home visit from a community health worker increased mammography screening.<sup>80</sup> Developing spiritually-based interventions help to promote colorectal cancer screening by framing the health message with spiritual themes and scriptures.<sup>93</sup> In another church-based intervention, community health workers were successful in promoting cancer awareness in the African-American community, emphasizing the important link between community health workers, the target population, and the community organizations in which they serve.<sup>94</sup> Additionally, Mabiso and colleagues (2010) described the success of using the ‘Kin Keeper Cancer Prevention Intervention’ to increase breast cancer literacy in African-American women.<sup>95</sup> However, in another study, a Lay Health Advisor (LHA) intervention was less effective at increasing colorectal cancer screening compared with an intervention including a targeted video and tailored newsletters. This finding, however, was due to difficulties reaching participants and circulating information.<sup>16</sup>

Community health workers have also been used to increase cancer screening in Asian-American communities. Two studies examined the effectiveness of community health workers in the Korean-American community. In one study, bilingual Korean health educators providing cervical cancer education and patient navigation increased Pap testing significantly more than general health education that included information on cervical cancer screening.<sup>96</sup> In a second study, two groups were provided low-cost mammography. One of the groups also received peer-group education. The low-cost mammography increased mammography screening rates for both groups. Although the women receiving peer-group education had improved knowledge and attitudes towards mammography, the mammography screening rates were the same for both groups.<sup>97</sup> Multi-

strategy interventions that include community health workers have increased colorectal screening in Chinese-American men and women.<sup>45, 98</sup> FOBT screening was more than double among Chinese men and women who participated in an intervention with a community health worker, video, and motivational and information pamphlets compared with a control group receiving usual care.<sup>45</sup> Strategies targeting Pap testing<sup>99</sup> and breast cancer screening<sup>100</sup> in Vietnamese-American women have also been successful. An intervention that included a multi-media campaign, lay health worker outreach, Pap clinic, registry, and reminders resulted in significantly higher Pap testing rates in the intervention community than in a control community receiving usual care.<sup>99</sup> However, community health-worker interventions are not as successful in targeting women who have never had a Pap test before.<sup>101</sup> Using community health workers also increased breast cancer screening for Vietnamese-American women.<sup>100</sup> Community health worker interventions have also been successful when implemented for Laotian and Cambodian women in California.<sup>102</sup>

Community health workers may also be effective when targeting other populations who may be under- or un-screened such as low-income and rural populations. In a study with low-income Caucasian, African-American, and Native American women, women in the intervention that included access to a Lay Health Advisor (LHA) were more positive about mammography and had fewer barriers obtaining screening mammograms than women who did not have access to a LHA.<sup>84</sup> In another study with low-income Caucasian, African-American, and Native American women, an intensive education program with a LHA promoting mammography resulted in incidental increases in Pap testing compared with a control group who received a physician's letter and brochure on cervical cancer screening.<sup>41</sup> Additionally, in a study with Appalachian women in rural Kentucky, the Faith Moves Mountains (FMM) program promotes cervical cancer screening by sending community health workers for tailored, face-to-face home visits, resulting in change in the community.<sup>103</sup>

Patient navigators are another type of community health worker. Patient navigators help individuals overcome healthcare organization barriers to receiving health and/or screening services. Patient navigators can increase colonoscopy compliance,<sup>85, 86</sup> numbers of endoscopic examinations and FOBTs,<sup>87</sup> and breast cancer screening<sup>104</sup> in low-income minority populations. In two previously described studies, colorectal screening increased in individuals who received telephone counseling from a patient navigator in addition to mailed invitation or reminder letters.<sup>17, 46</sup> Training is a key component of community health worker interventions. Two studies examined methods of training community health workers. One study used a training curriculum based on Bandura's Social Learning Theory and the National Cancer Institute's health communication process.<sup>105</sup> The second study used a train-the-trainer program in which they recruited elderly African-American women to be leaders and peer health educators.<sup>106</sup>

### Community Health Workers

Community health workers are members of the community who are trained to provide information on health topics and health services to members of their communities. Community health workers are useful when working with populations who face barriers to accessing health information and services, such as ethnic and immigrant populations, low-income, poorly educated, and/or rural populations. By providing education and counseling, community health workers can reduce the cultural and language barriers individuals encounter when trying to access health information and services.

## Media campaigns

**Media campaigns** including television, radio, and newspaper advertisements to promote breast, cervical, and cancer screening were discussed in a number of studies. In the United States, Screen for Life: National Colorectal Cancer Action Campaign created television public service announcements in English and Spanish to promote colorectal cancer screening in adults 50 years or older.<sup>107</sup> In Atlanta, Detroit and San Francisco, since 1975, detection of breast tumors increased in the calendar-year quarters that included a Breast Cancer Awareness month, during which the media and other groups participate in activities that promote breast cancer screening behaviour.<sup>108</sup> In Victoria, Australia, a mass media campaign was successful in increasing cervical cancer screening for women from all socioeconomic backgrounds.<sup>109</sup> Media campaigns were also created to target different ethnic groups. A local mass media campaign supported by community volunteers that targeted low-income Mexican neighborhoods in Texas increased Pap testing for women less than 40 years of age.<sup>110</sup> Additionally, a social marketing campaign was successful in increasing cervical cancer screening rates for Maori and Pacific women in New Zealand<sup>111</sup> and using Asian language media, the Healthy Asian-Americans Project (HAAP) was able to increase knowledge and awareness about the importance of colorectal cancer screening in Asian Indian, Chinese, Filipino, Hmong, Japanese, Korean and Vietnamese-American communities.<sup>112</sup> However, a series of radio and newspaper advertisements run on Italian radio stations and in Italian newspapers did not significantly improve mammography screening rates among Italian-speaking women in the United States.<sup>113</sup>

### Media Campaigns

Media campaigns can be used to increase cancer screening behaviour, especially when combined with efforts from other community groups. For example, during Breast Cancer Awareness Month (in October), breast cancer screening is promoted by the media as well as other groups who organize initiatives to raise funds and awareness. Media campaigns can reach beyond the English-speaking population by including components in commonly spoken languages other than English. Media education campaigns that target different ethnic groups are most effective when combined with interventions involving community health workers.

## Computer-based interventions

Recently, **computer-based interventions** have become more popular. Though costly to develop and implement, the tailored and interactive nature of these interventions may make them more effective than targeted videos or brochures. A number of different types of computer-based interventions were described in the literature including computer-assisted instruction programs, computer kiosks, computer-based decision aids, and a Patient/Provider Communication Assistant (PPCA). Computer-based interventions were also used to assess individual characteristics (e.g. risk, knowledge, perceptions, behaviour) in order to tailor education and counseling efforts.<sup>114-116</sup>

The vast majority of the studies reported positive results from using computer-based interventions. A tailored interactive computer-assisted instruction program was more effective at increasing mammography screening rates in low-income African-American women than a targeted video or a pamphlet.<sup>47</sup> Computer kiosks that generate individually tailored magazines on breast cancer and mammography located at various community sites including laundromats, beauty salons,

churches, neighborhood community centers, and social service agencies increased mammography knowledge and screening in African-American women.<sup>117</sup> Tailored interactive, multimedia kiosks also increased cervical cancer screening knowledge and behaviour among Latina women, in comparison to a cervical cancer brochure.<sup>48</sup> A computer-based decision aid increased patients' intent to ask providers about screening, knowledge about screening, and screening behaviour.<sup>118</sup>

A computer tablet, Patient/Provider Communication Assistant (PPCA), that generates tailored notes to educate patients and providers, increased discussions between patients and providers about colorectal cancer screening, recommendations from providers for patients to be screened and patients' intentions to be screened.<sup>119</sup> A personally tailored interactive computer program increased colorectal cancer screening self-efficacy and reduced perceived barriers more than a non-tailored electronic leaflet.<sup>120</sup> Software glitches prevented some participants from being included in the last study. A multimedia program developed for Hispanic/Latino patients to promote colorectal cancer screening was successful at increasing knowledge and willingness to consider screening.<sup>121</sup>

The only study that reported poor results from a computer-based intervention used a personalized email from physicians reminding patients to be screened and providing a link to a webpage with more information on colorectal cancer screening, along with a mailed FOBT card. The majority of participants who were sent an email did not view the email. As well, the number of FOBT cards returned was comparable in the intervention group and a control group who received a mailed reminder and FOBT card.<sup>122</sup> Additionally, Joshi and colleagues (2009) stressed the importance of bringing together usability experts and health professionals to evaluate computer-mediated patient education tools.<sup>123</sup>

### **Interactive Computer-based Interventions**

Interactive computer-based interventions may improve cancer screening knowledge, perceptions, and intentions. A wide variety of computer-based interventions have demonstrated success in promoting cancer screening, including multimedia kiosks, personally tailored computer decision aids and multimedia computer programs. Computer-based interventions that are not interactive and do not include a tailored component, such as email reminders, are less effective. Limitations to the use of computer-based interventions are the possibility of software glitches. Interventions that use email are ineffective for individuals who may not have access to email or regularly read their email.

### Healthcare provider education

Healthcare providers have a strong influence on their patient's cancer screening behaviour. Healthcare provider education focuses on encouraging healthcare providers to increase their own knowledge and awareness and willingness to encourage patients to discuss and participate in breast, cervical, and colorectal cancer screening.

Examples of types of healthcare provider education activities in the literature include workshops and seminars on cancer screening<sup>124, 125</sup>, quality improvement workshops for cancer screening services<sup>126</sup>, individualized feedback<sup>126</sup>, provider updates on screening rates of patients in their

practice<sup>126, 127</sup>, training to improve communication with patients with limited literacy<sup>126</sup>, didactic lectures, and interactive case-based seminars.<sup>128</sup>

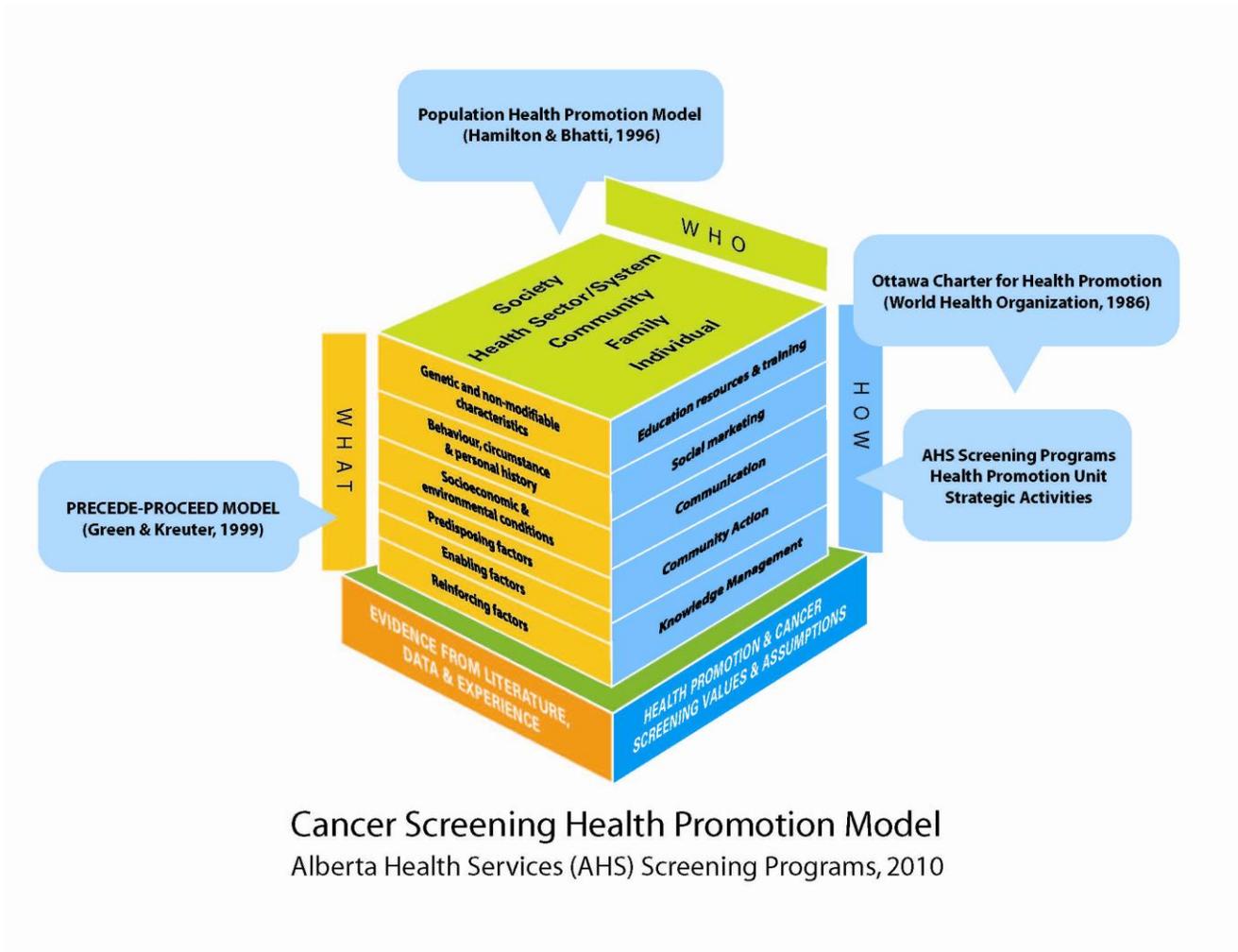
A series of continuing medical education workshops with Vietnamese-American physicians increased knowledge and understanding of cervical cancer and Pap testing,<sup>124</sup> as well as colorectal cancer screening.<sup>125</sup> Recommendations for colorectal cancer screening as well as completion of colorectal cancer screening was significantly higher in a clinic where providers participated in quality improvement workshops, received individualized feedback, updates on group screening rates, and were trained to improve communication with low-literate patients, compared with a control clinic consisting of usual care.<sup>126</sup> Providing rural nurses with education on breast cancer screening is useful in improving patient outcomes.<sup>127</sup> Colorectal cancer screening knowledge and clinical risk assessment skills were higher among internal medical residents who received training through a didactic lecture and interactive case-based seminar and were given a risk assessment tool, compared with internal medical residents who only received the didactic lecture.<sup>128</sup>

Providers can also be advised on how to create an office environment that promotes participation in cancer screening. Oscarsson and colleagues (2008) found that changing the office environment to include processes such as more flexible appointment times and a friendlier atmosphere, in response to a telephone-based survey of women resulted in improved Pap testing rates.<sup>129</sup> In three other studies, similar changes to the office environment resulted in improved colorectal cancer screening rates.<sup>22, 130, 131</sup>

### **Healthcare Provider Education**

Interactive workshops, individualized feedback, and specific training for healthcare providers can increase provider knowledge and communication with patients regarding cancer screening behaviour. Healthcare providers can also be encouraged and advised to enhance office environments to promote cancer screening and make services more appealing to patients.

## APPENDIX A: CANCER SCREENING HEALTH PROMOTION MODEL



## APPENDIX B: LITERATURE REVIEW METHODS

Literature on interventions that promote cancer screening was gathered from a search for peer-reviewed articles on breast, cervical, and colorectal cancer screening promotion practices. Table 1 provides a list of the databases and search terms used for the literature review. Articles retrieved were in English, had human subjects, and involved adults age 18 years and over. Where possible, articles were restricted to the target age and gender groups for each of the screening programs (women aged 50-69 years for breast cancer screening; women aged 21-69 years for cervical cancer screening; men and women aged 50-74 years for colorectal cancer screening). A total of 1653 articles were retrieved. Articles that were published prior to 2003, described studies conducted in developing countries, focused on patient diagnosis and/or treatment and involved patients considered high-risk were excluded. Articles that focused on determinants or promotion of cancer screening by methods other than mammogram, Pap test, FOBT (Fecal Occult Blood Test), colonoscopy, flexible sigmoidoscopy, or barium enema were also excluded. The remaining 360 articles were then separated into review articles (n=12), articles examining determinants of cancer screening behaviour (n=151) and articles describing outcomes of cancer screening promotion interventions (n=197).

Sixty-two articles focused on promotion of breast cancer screening, 30 articles focused on promotion of cervical cancer screening, and 71 articles focused on promotion of colorectal cancer screening. Twenty articles examined promotion of both breast and cervical cancer screening and 14 articles focused on promotion of breast, cervical, and colorectal cancer screening. The majority of intervention studies were conducted in the United States. Studies were also reviewed from Australia, Belgium, Canada, France, Germany, Korea, Netherlands, Samoa, Sweden, New Zealand, China and Taiwan. Eighty-two articles specified ethnic groups as target populations. The ethnic groups involved included African-American, Aboriginal, Hispanic, Chinese-American, Korean-American, Vietnamese-American, Laotian-American, Cambodian-American, Italian-American, Korean, Taiwanese, Dutch, and Samoan. Other target populations included low-income, low literate, minority, homeless, mentally ill, farm, rural, lesbian, veteran women, and female prison inmates. The age groups targeted in the majority of articles were ages 40 years and older for breast cancer screening, ages 18 years and older for cervical cancer screening, and ages 50 and older for colorectal cancer screening.

The studies reviewed in this section include various target populations and often compare multiple interventions to see which are most effective in their target population. Characteristics of target populations are described. Several studies included randomization. In randomized studies, the study participants are randomly assigned to different intervention groups or a control group. The interventions involve different activities and sometimes combinations of activities. The control group is typically the usual care received. Randomization is an attempt to ensure that any differences in screening rates between groups are the result of the intervention activities and not other factors related to each of the study groups. The studies that did not involve randomization were either quasi-experimental (that included intervention and control groups but did not randomize the participants), pre and post studies (that compared outcomes from before and after the intervention) or were reviews of existing programs.

**Table 1. Databases and search terms used for Cancer Screening Determinants and Cancer Screening Promotion Interventions Literature Reviews**

Database	Type of search term	Search terms used
EMBASE (Excerpta Medica Database)	Medical Subject Heading (MeSH)	breast cancer/diagnosis, prevention OR uterine cervix cancer/diagnosis, prevention OR colorectal cancer/diagnosis, prevention AND mass screening OR cancer screening OR mammography OR Papanicolaou test or vaginal smear OR occult blood AND health promotion OR patient education OR continuing education and staff training
CINAHL (Cumulative Index to Nursing and Allied Health Literature)	Medical Subject Heading (MeSH)	breast neoplasms OR cervix neoplasms OR colorectal neoplasms AND cancer screening OR mammography OR cervical smears OR occult blood AND health promotion OR education medical continuing OR education nursing continuing
	Keyword	breast cancer OR cervical cancer OR colorectal cancer AND screening OR mammography OR pap OR cervical smear OR occult AND train OR education OR promotion
MEDLINE® (Medical Literature Analysis and Retrieval System Online)	Medical Subject Heading (MeSH)	breast neoplasms/diagnosis, prevention and control OR cervical neoplasms/diagnosis, prevention and control OR colorectal neoplasms/diagnosis, prevention and control AND mass screening OR mammography OR vaginal smears OR occult blood AND health promotion
PsycINFO®	Medical Subject Heading (MeSH)	neoplasms AND cancer screening AND health promotion
Cochrane Library	Keyword	breast cancer screening increase OR cervical cancer screening increase OR colorectal cancer screening increase

## REFERENCES

1. Luckmann R, Savageau JA, Clemow L, Stoddard AM, Costanza ME. A Randomized Trial of Telephone Counseling to Promote Screening Mammography in Two HMOs. *Cancer Detection and Prevention* 2003;27(6):442-50.
2. Champion V, Maraj M, Hui S, Perkins AJ, Tierney W, Menon U, Skinner CS. Comparison of Tailored Interventions to Increase Mammography Screening in Nonadherent Older Women. *Preventive Medicine* 2003;36(2):150-8.
3. Saywell RM, Champion VL, Skinner CS, Menon U, Daggy J. A Cost-Effectiveness Comparison of Three Tailored Interventions to Increase Mammography Screening. *Journal of Women's Health (2002)* 2004;13(8):909-18.
4. West DS, Greene P, Pulley L, Kratt P, Gore S, Weiss H, Siegfried N. Stepped-Care, Community Clinic Interventions to Promote Mammography use among Low-Income Rural African American Women. *Health Education & Behavior* 2004;31(4 Suppl):29S-44S.
5. Slater JS, Henly GA, Ha CN, Malone ME, Nyman JA, Diaz S, McGovern PG. Effect of Direct Mail as a Population-Based Strategy to Increase Mammography use among Low-Income Underinsured Women Ages 40 to 64 Years. *Cancer Epidemiology, Biomarkers & Prevention : A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology* 2005;14(10):2346-52.
6. Carney PA, Harwood BG, Greene MA, Goodrich ME. Impact of a Telephone Counseling Intervention on Transitions in Stage of Change and Adherence to Interval Mammography Screening (United States). *Cancer Causes & Control : CCC* 2005;16(7):799-807.
7. Robinson J, Seltzer V, Lawrence L, Autz G, Kostroff K, Weiselberg L, Colagiaco M. The Mammography Screening Employee Inreach Program. *Journal of Reproductive Medicine* 2007;52(2):75-7.
8. Bowen DJ, Powers D. Effects of a Mail and Telephone Intervention on Breast Health Behaviors. *Health Education & Behavior* 2010;37(4):479-89.
9. Jibaja-Weiss ML, Volk RJ, Smith QW, Holcomb JD, Kingery P. Differential Effects of Messages for Breast and Cervical Cancer Screening. *Journal of Health Care for the Poor and Underserved* 2005;16(1):42-52.
10. Valanis B, Whitlock EE, Mullooly J, Vogt T, Smith S, Chen C, Glasgow RE. Screening Rarely Screened Women: Time-to-Service and 24-Month Outcomes of Tailored Interventions. *Preventive Medicine* 2003;37(5):442-50.
11. de Jonge E, Cloes E, Op de Beeck L, Adriaens B, Lousbergh D, Orye GG, Buntinx F. A Quasi-Randomized Trial on the Effectiveness of an Invitation Letter to Improve Participation in a Setting of Opportunistic Screening for Cervical Cancer. *European Journal of Cancer Prevention : The Official Journal of the European Cancer Prevention Organisation (ECP)* 2008;17(3):238-42.

12. Oscarsson MG, Benzein EG, Wijma BE, Carlsson PG. Promotion of Cervical Screening among Nonattendees: A Partial Cost-Effectiveness Analysis. *European Journal of Cancer Prevention* 2007;16(6):559-63.
13. Stein K, Lewendon G, Jenkins R, Davis C. Improving Uptake of Cervical Cancer Screening in Women with Prolonged History of Non-Attendance for Screening: A Randomized Trial of Enhanced Invitation Methods. *Journal of Medical Screening* 2005;12(4):185-9.
14. Eaker S, Adami HO, Granath F, Wilander E, Sparén P. A Large Population-Based Randomized Controlled Trial to Increase Attendance at Screening for Cervical Cancer. *Cancer Epidemiology, Biomarkers & Prevention : A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology* 2004;13(3):346-54.
15. Hou SI. Stage of Adoption and Impact of Direct-Mail Communications with and without Phone Intervention on Chinese Women's Cervical Smear Screening Behavior. *Preventive Medicine* 2005;41(3-4):749-56.
16. Campbell MK, James A, Hudson MA, Carr C, Jackson E, Oakes V, Demissie S, Farrell D, Tessaro I. Improving Multiple Behaviors for Colorectal Cancer Prevention among African American Church Members. *Health Psychology : Official Journal of the Division of Health Psychology, American Psychological Association* 2004;23(5):492-502.
17. Percac-Lima S, Grant RW, Green AR, Ashburner JM, Gamba G, Oo S, Richter JM, Atlas SJ. A Culturally Tailored Navigator Program for Colorectal Cancer Screening in a Community Health Center: A Randomized, Controlled Trial. *Journal of General Internal Medicine* 2009;24(2):211-7.
18. Basch CE, Wolf RL, Brouse CH, Shmukler C, Neugut A, DeCarlo LT, Shea S. Telephone Outreach to Increase Colorectal Cancer Screening in an Urban Minority Population. *American Journal of Public Health* 2006;96(12):2246-53.
19. Lairson DR. Cost-Effectiveness of Targeted and Tailored Interventions on Colorectal Cancer Screening use. *Cancer* 2008;112(4):779-88.
20. Wardle J, Williamson S, McCaffery K, Sutton S, Taylor T, Edwards R, Atkin W. Increasing Attendance at Colorectal Cancer Screening: Testing the Efficacy of a Mailed, Psychoeducational Intervention in a Community Sample of Older Adults. *Health Psychology : Official Journal of the Division of Health Psychology, American Psychological Association* 2003;22(1):99-105.
21. Myers RE, Sifri R, Hyslop T, Rosenthal M, Vernon SW, Cocroft J, Wolf T, Andrel J, Wender R. A Randomized Controlled Trial of the Impact of Targeted and Tailored Interventions on Colorectal Cancer Screening. *Cancer* 2007;110(9):2083-91.
22. Ling BS, Schoen RE, Trauth JM, Wahed AS, Eury T, Simak DM, Solano FX, Weissfeld JL. Physicians Encouraging Colorectal Screening: A Randomized Controlled Trial of Enhanced

- Office and Patient Management on Compliance with Colorectal Cancer Screening. *Archives of Internal Medicine* 2009;169(1):47-55.
23. Walsh JM, Salazar R, Terdiman JP, Gildengorin G, Perez-Stable EJ. Promoting use of Colorectal Cancer Screening Tests. can we Change Physician Behavior?. *Journal of General Internal Medicine* 2005;20(12):1097-101.
  24. Miesfeldt S, Hayden C, Apedoe N, Jerome S, Fletcher A. Colorectal Cancer Screening Pilot Program for Underserved Women in Cumberland County, Maine. *Journal of Community Health: The Publication for Health Promotion and Disease Prevention* 2010;35(2):109-14.
  25. Sequist TD, Franz C, Ayanian JZ. Cost-Effectiveness of Patient Mailings to Promote Colorectal Cancer Screening. *Medical Care* 2010;48(6):553-7.
  26. Partin MR, Slater JS, Caplan L. Randomized Controlled Trial of a Repeat Mammography Intervention: Effect of Adherence Definitions on Results. *Preventive Medicine* 2005;41(3-4):734-40.
  27. Goel A, George J, Burack RC. Telephone Reminders Increase Re-Screening in a County Breast Screening Program. *Journal of Health Care for the Poor and Underserved* 2008;19(2):512-21.
  28. Church TR, Yeazel MW, Jones RM, Kochevar LK, Watt GD, Mongin SJ, Cordes JE, Engelhard D. A Randomized Trial of Direct Mailing of Fecal Occult Blood Tests to Increase Colorectal Cancer Screening. *Journal of the National Cancer Institute* 2004;96(10):770-80.
  29. Tifratene K, Eisinger F, Rinaldi Y, Didelot R, Seitz JF. Colorectal Cancer Screening Program: Cost Effectiveness of Systematic Recall Letters. *Gastroentérologie Clinique Et Biologique* 2007;31(11):929-33.
  30. Hudson SV, Ohman-Strickland P, Cunningham R, Ferrante JM, Hahn K, Crabtree BF. The Effects of Teamwork and System Support on Colorectal Cancer Screening in Primary Care Practices. *Cancer Detection and Prevention* 2007;31(5):417-23.
  31. Sequist TD, Zaslavsky AM, Marshall R, Fletcher RH, Ayanian JZ. Patient and Physician Reminders to Promote Colorectal Cancer Screening: A Randomized Controlled Trial. *Archives of Internal Medicine* 2009;169(4):364-71.
  32. Kreuter MW, Skinner CS. Tailoring: What's in a Name? *Health Education Research* 2000;15(1):1-4.
  33. Rosenstock IM. Historical Origins of the Health Belief Model. *Health Education Monographs* 1974;2:328-35.
  34. Prochaska JO, DiClemente CC. Stages and Processes of Self-Change of Smoking: Toward an Integrative Model of Change. *Journal of Consulting and Clinical Psychology* 1983;51(3):390-5.

35. Kreuter MW, Wray RJ. Tailored and Targeted Health Communication: Strategies for Enhancing Information Relevance. *Am J Health Behav* 2003;27(Suppl 3):S227-S232.
36. Boling W, Laufman L, Lynch GR, Weinberg AD. Increasing Mammography Screening through Inpatient Education. *Journal of Cancer Education* 2005;20(4):247-50.
37. Trevena LJ, Irwig L, Barratt A. Randomized Trial of a Self-Administered Decision Aid for Colorectal Cancer Screening. *Journal of Medical Screening* 2008;15(2):76-82.
38. Denberg TD, Coombes JM, Byers TE, Marcus AC, Feinberg LE, Steiner JF, Ahnen DJ. Effect of a Mailed Brochure on Appointment-Keeping for Screening Colonoscopy: A Randomized Trial. *Annals of Internal Medicine* 2006;145(12):895-900.
39. Maxwell AE, Jo AM, Chin SY, Lee KS, Bastani R. Impact of a Print Intervention to Increase Annual Mammography Screening among Korean American Women Enrolled in the National Breast and Cervical Cancer Early Detection Program. *Cancer Detection & Prevention* 2008;32(3):229-35.
40. Vahabi M. Verbal Versus Numerical Probabilities: Does Format Presentation of Probabilistic Information regarding Breast Cancer Screening Affect Women's Comprehension? *Health Education Journal* 2010;69(2):150-63.
41. Katz ML, Tatum CM, Degraffinreid CR, Dickinson S, Paskett ED. Do Cervical Cancer Screening Rates Increase in Association with an Intervention Designed to Increase Mammography Usage? *Journal of Women's Health (2002)* 2007;16(1):24-35.
42. Welsh AL, Sauaia A, Jacobellis J, Min SJ, Byers T. The Effect of Two Church-Based Interventions on Breast Cancer Screening Rates among Medicaid-Insured Latinas. *Preventing Chronic Disease* 2005;2(4):A07.
43. Loss J, Eichhorn C, Nagel E. The Effects of Promoting Colorectal Cancer Screening on Screening Utilisation: Evaluation of the German Campaign "Aktiv Gegen Darmkrebs" (Action Against Colorectal Cancer). *Zeitschrift Fur Gastroenterologie* 2006;44(11):1127-34.
44. Warren K. HPV Knowledge among Female College Students and the Short Term Effectiveness of HPV Education. *Internet Journal of Academic Physician Assistants* 2010;7(2):14p-.
45. Tu SP, Taylor V, Yasui Y, Chun A, Yip MP, Acorda E, Li L, Bastani R. Promoting Culturally Appropriate Colorectal Cancer Screening through a Health Educator: A Randomized Controlled Trial. *Cancer* 2006;107(5):959-66.
46. Myers RE, Hyslop T, Sifri R, Bittner-Fagan H, Katurakes NC, Cocroft J, Dicarolo M, Wolf T. Tailored Navigation in Colorectal Cancer Screening. *Medical Care* 2008;46(9 Suppl 1):S123-31.
47. Champion VL, Springston JK, Zollinger TW, Saywell RM, Monahan PO, Zhao Q, Russell KM. Comparison of Three Interventions to Increase Mammography Screening in Low Income African American Women. *Cancer Detection and Prevention* 2006;30(6):535-44.

48. Valdez A. An Interactive Cervical Cancer Education Intervention for Latinas. *American Public Health Association 133rd Annual Meeting & Exposition; Dec 10 2005; Philadelphia,MA 2005.*
49. Martin MT, Lane AJ, Neuman ME. Breast Cancer Screening Program Targeting Rural Hispanics in Southeastern Indiana: Program Evaluation. *Hispanic Health Care International* 2009;7(3):153-9.
50. Katz ML, Heaner S, Reiter P, van Putten J, Murray L, McDougle L, Cegala DJ, Post D, David P, Slater M, Paskett ED. Development of an Educational Video to Improve Patient Knowledge and Communication with their Healthcare Providers about Colorectal Cancer Screening. *American Journal of Health Education* 2009;40(4):220-8.
51. Zapka JG, Lemon SC, Puleo E, Estabrook B, Luckmann R, Erban S. Improving Patient Care. Patient Education for Colon Cancer Screening: A Randomized Trial of a Video Mailed before a Physical Examination. *Annals of Internal Medicine* 2004;141(9):683.
52. Wang JH, Liang W, Schwartz MD, Lee MM, Kreling B, Mandelblatt JS. Development and Evaluation of a Culturally Tailored Educational Video: Changing Breast Cancer-Related Behaviors in Chinese Women. *Health Education & Behavior* 2008;35(6):806-20.
53. Borrayo EA. Where's Maria? A Video to Increase Awareness about Breast Cancer and Mammography Screening among Low-Literacy Latinas. *Preventive Medicine* 2004;39(1):99-110.
54. Love GD, Mouttapa M, Tanjasiri SP. Everybody's Talking: Using Entertainment-Education Video to Reduce Barriers to Discussion of Cervical Cancer Screening among Thai Women. *Health Education Research* 2009;24(5):829-38.
55. Darling CM, Nelson CP, Fife RS. Improving Breast Health Education for Hispanic Women. *Journal of the American Medical Womens Association* 2004;59(3):171-9.
56. Grindel CG, Brown L, Caplan L, Blumenthal D. The Effect of Breast Cancer Screening Messages on Knowledge, Attitudes, Perceived Risk, and Mammography Screening of African American Women in the Rural South. *Oncology Nursing Forum* 2004;31(4):801-8.
57. Griffith JM, Fichter M, Fowler FJ, Lewis C, Pignone MP. Should a Colon Cancer Screening Decision Aid Include the Option of no Testing? A Comparative Trial of Two Decision Aids. *BMC Medical Informatics & Decision Making* 2008;8:10.
58. Kim JH, Menon U. Pre- and Postintervention Differences in Acculturation, Knowledge, Beliefs, and Stages of Readiness for Mammograms among Korean American Women. *Oncology Nursing Forum* 2009;36(2):E80-92.
59. Dibble SL, Roberts SA. Improving Cancer Screening among Lesbians Over 50: Results of a Pilot Study. *Oncology Nursing Forum* 2003;30(4):E71-9.

60. Martin RE, Hislop TG, Grams GD, Calam B, Jones E, Moravan V. Evaluation of a Cervical Cancer Screening Intervention for Prison Inmates. *Canadian Journal of Public Health* 2004;95(4):285-9.
61. Greenwald BJ, Edwards JU. Worksite Education Programs by County Extension Agents to Promote Colorectal Cancer Prevention and Screening. *Gastroenterology Nursing* 2010;33(5):348-52.
62. Lewis C, Pignone M, Schild LA, Scott T, Winqvist A, Rimer BK, Glanz K. Effectiveness of a Patient- and Practice-Level Colorectal Cancer Screening Intervention in Health Plan Members: Design and Baseline Findings of the CHOICE Trial. *Cancer* 2010;116(7):1664-73.
63. Blumenthal DS, Smith SA, Majett CD, Alema-Mensah E. A Trial of 3 Interventions to Promote Colorectal Cancer Screening in African Americans. *Cancer (0008543X)* 2010;116(4):922-9.
64. Kagawa-Singer M, Tanjasiri SP, Valdez A, Yu H, Foo MA. Outcomes of a Breast Health Project for Hmong Women and Men in California. *American Journal of Public Health* 2009;99:S467-73.
65. Kim JH, Menon U, Wang E, Szalacha L. Assess the Effects of Culturally Relevant Intervention on Breast Cancer Knowledge, Beliefs, and Mammography use among Korean American Women. *Journal of Immigrant and Minority Health / Center for Minority Public Health* 2010;12(4):586-97.
66. Calderón J, Bazargan M, Sangasubana N, Hays RD, Hardigan P, Baker RS. A Comparison of Two Educational Methods on Immigrant Latinas Breast Cancer Knowledge and Screening Behaviors. *Journal of Health Care for the Poor & Underserved* 2010;21(3):76-90.
67. Ueland AS, Hornung PA, Greenwald B. Colorectal Cancer Prevention and Screening: A Health Belief Model-Based Research Study to Increase Disease Awareness. *Gastroenterology Nursing* 2006;29(5):357-63.
68. Greenwald B. Promoting Community Awareness of the Need for Colorectal Cancer Screening: A Pilot Study. *Cancer Nursing* 2006;29(2):134-41.
69. Dillard AJ, Fagerlin A, Dal Cin S, Zikmund-Fisher B, Ubel PA. Narratives that Address Affective Forecasting Errors Reduce Perceived Barriers to Colorectal Cancer Screening. *Social Science & Medicine* 2010;71(1):45-52.
70. Stokamer CL, Tenner CT, Chaudhuri J, Vazquez E, Bini EJ. Randomized Controlled Trial of the Impact of Intensive Patient Education on Compliance with Fecal Occult Blood Testing. *Journal of General Internal Medicine* 2005;20(3):278-82.
71. Braun KL, Fong M, Kaanoi ME, Kamaka ML, Gotay CC. Testing a Culturally Appropriate, Theory-Based Intervention to Improve Colorectal Cancer Screening among Native Hawaiians. *Preventive Medicine* 2005;40(6):619-27.

72. Gorski J. Expanding our Horizons: Taking the Next Step--Evidence-Based Pilot project/improving Colorectal Cancer Screening Rates at Gundersen Lutheran... SGNA's 37th Annual Course, April 30-may 5, 2010, Orlando, Florida. *Gastroenterology Nursing* 2010;33(2):156-.
73. Byrne S, RoblesRodriguez E. Educational Parties as a Strategy to Promote Breast Health Awareness and Screening in Underserved Female Populations. *Oncology Nursing Forum* 2009;36(2):145-8.
74. Liu C, Xia H, Isaman D, Deng W, Oakley D. Nursing Clinical Trial of Breast Self-Examination Education in China. *International Nursing Review* 2010;57(1):128-34.
75. Morgan PD, Fogel J, Tyler ID, Jones JR. Culturally Targeted Educational Intervention to Increase Colorectal Health Awareness among African Americans. *Journal of Health Care for the Poor & Underserved* 2010;21(3):132-47.
76. Beach ML, Flood AB, Robinson CM, Cassells AN, Tobin JN, Greene MA, Dietrich AJ. Can Language-Concordant Prevention Care Managers Improve Cancer Screening Rates? *Cancer Epidemiology, Biomarkers & Prevention : A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology* 2007;16(10):2058-64.
77. Dietrich AJ, Tobin JN, Cassells A, Robinson CM, Greene MA, Sox CH, Beach ML, DuHamel KN, Younge RG. Telephone Care Management to Improve Cancer Screening among Low-Income Women: A Randomized, Controlled Trial. *Annals of Internal Medicine* 2006;144(8):563-71.
78. Lauver DR, Settersten L, Kane JH, Henriques JB. Tailored Messages, External Barriers, and Women's Utilization of Professional Breast Cancer Screening Over Time. *Cancer* 2003;97(11):2724-35.
79. Eng E, Young R. Lay Health Advisors as Community Change Agents. *Fam Community Health* 1992;15:24-40.
80. Powell ME, Carter V, Bonsi E, Johnson G, Williams L, Taylor-Smith L, Hull PC, Cain VA, Husaini BA. Increasing Mammography Screening among African American Women in Rural Areas. *Journal of Health Care for the Poor & Underserved* 2005;16(4):11-21.
81. Martin MY. Community Health Advisors Effectively Promote Cancer Screening. *Ethnicity & Disease* 2005;15(2 Suppl 2):S14-6.
82. Fowler BA, Rodney M, Roberts S, Broadus L. Collaborative Breast Health Intervention for African American Women of Lower Socioeconomic Status. *Oncology Nursing Forum*.Online 2005;32(6):1207-16.
83. Lewin SA, Dick J, Pond P, Zwarenstein M, Aja G, van Wyk B, Bosch-Capblanch X, Patrick M. Lay Health Workers in Primary and Community Health Care. *Cochrane Database of Systematic Reviews (Online)* 2005;(1)(1):CD004015.

84. Paskett E, Tatum C, Rushing J, Michielutte R, Bell R, Long Foley K, Bittoni M, Dickinson SL, McAlearney AS, Reeves K. Randomized Trial of an Intervention to Improve Mammography Utilization among a Triracial Rural Population of Women. *Journal of the National Cancer Institute* 2006;98(17):1226-37.
85. Christie JL. A Randomized Controlled Trial using Patient Navigation to Increase Colorectal Cancer Screening in Low-Income Underrepresented Minorities. *Journal of Gastroenterology* 2005;128(4 suppl 2):Abstract W916.
86. Christie J, Itzkowitz S, Lihau-Nkanza I, Castillo A, Redd W, Jandorf L. A Randomized Controlled Trial using Patient Navigation to Increase Colonoscopy Screening among Low-Income Minorities. *Journal of the National Medical Association* 2008;100(3):278-84.
87. Jandorf L, Gutierrez Y, Lopez J, Christie J, Itzkowitz SH. Use of a Patient Navigator to Increase Colorectal Cancer Screening in an Urban Neighborhood Health Clinic. *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 2005;82(2):216-24.
88. Wasserman MR, Bender DE, Lee S, Morrissey JP, Mouw T, Norton EC. Social Support among Latina Immigrant Women: Bridge Persons as Mediators in Cervical Cancer Screening. *Journal of Immigrant & Minority Health* 2006;8(1):67-84.
89. Hansen LK, Feigl P, Modiano MR, Lopez JA, Sluder SE, Moinpour CM, Pauler DK, Meyskens FL. An Educational Program to Increase Cervical and Breast Cancer Screening in Hispanic Women: A Southwest Oncology Group Study. *Cancer Nursing* 2005;28(1):47-53.
90. Navarro AM, Raman R, McNicholas LJ, Loza O. Diffusion of Cancer Education Information through a Latino Community Health Advisor Program. *Preventive Medicine* 2007;45(2-3):135-8.
91. Larkey L. Las Mujeres Saludables: Reaching Latinas for Breast, Cervical and Colorectal Cancer Prevention and Screening. *Journal of Community Health* 2006;31(1):69-77.
92. Fernandez ME, Gonzales A, Tortolero-Luna G, Williams J, Saavedra-Embesi M, Chan W, Vernon SW. Effectiveness of Cultivando La Salud: A Breast and Cervical Cancer Screening Promotion Program for Low-Income Hispanic Women. *American Journal of Public Health* 2009;99(5):936-43.
93. Holt CL, Roberts C, Scarinci I, Wiley SR, Eloubeidi M, Crowther M, Bolland J, Litaker MS, Southward V, Coughlin SS. Development of a Spiritually Based Educational Program to Increase Colorectal Cancer Screening among African American Men and Women. *Health Communication* 2009;24(5):400-12.
94. Rodriguez EM, Bowie JV, Frattaroli S, Gielen A. A Qualitative Exploration of the Community Partner Experience in a Faith-Based Breast Cancer Educational Intervention. *Health Education Research* 2009;24(5):760-71.

95. Mabiso A, Williams KP, Todem D, Templin TN. Longitudinal Analysis of Domain-Level Breast Cancer Literacy among African-American Women. *Health Education Research* 2010;25(1):151-61.
96. Fang CY, Ma GX, Tan Y, Chi N. A Multifaceted Intervention to Increase Cervical Cancer Screening among Underserved Korean Women. *Cancer Epidemiology Biomarkers and Prevention* 2007;16(6):1298-302.
97. Kim YH, Sarna L. An Intervention to Increase Mammography use by Korean American Women. *Oncology Nursing Forum* 2004;31(1):105-10.
98. Nguyen TT, Love MB, Liang C, Fung L, Nguyen T, Wong C, Gildengorin G, Woo K. A Pilot Study of Lay Health Worker Outreach and Colorectal Cancer Screening among Chinese Americans. *Journal of Cancer Education* 2010;25(3):405-12.
99. Mock J, McPhee SJ, Nguyen T, Wong C, Doan H, Lai KQ, Nguyen KH, Nguyen TT, Bui-Tong N. Effective Lay Health Worker Outreach and Media-Based Education for Promoting Cervical Cancer Screening among Vietnamese American Women. *American Journal of Public Health* 2007;97(9):1693-700.
100. Nguyen TT, Le G, Nguyen T, Le K, Lai K, Gildengorin G, Tsoh J, Bui-Tong N, McPhee SJ. Breast Cancer Screening among Vietnamese Americans: A Randomized Controlled Trial of Lay Health Worker Outreach. *American Journal of Preventive Medicine* 2009;37(4):306-13.
101. Taylor VM, Jackson JC, Yasui Y, Nguyen TT, Woodall E, Acorda E, Li L, Ramsey S. Evaluation of a Cervical Cancer Control Intervention using Lay Health Workers for Vietnamese American Women. *American Journal of Public Health* 2010;100(10):1924-9.
102. Ngoc Nguyen TU, Tanjasiri SP, Kagawa-Singer M, Tran JH, Foo MA. Community Health Navigators for Breast- and Cervical-Cancer Screening among Cambodian and Laotian Women: Intervention Strategies and Relationship-Building Processes. *Health Promotion Practice* 2008;9(4):356-67.
103. Schoenberg NE, Hatcher J, Dignan MB, Shelton B, Wright S, Dollarhide KF. Faith Moves Mountains: An Appalachian Cervical Cancer Prevention Program. *American Journal of Health Behavior* 2009;33(6):627-38.
104. Burhansstipanov L, Dignan MB, Schumacher A, Krebs LU, Alfonsi G, Apodaca CC. Breast Screening Navigator Programs within Three Settings that Assist Underserved Women. *Journal of Cancer Education* 2010;25(2):247-52.
105. Yu MY, Song L, Seetoo A, Cai C, Smith G, Oakley D. Culturally Competent Training Program: A Key to Training Lay Health Advisors for Promoting Breast Cancer Screening. *Health Education & Behavior* 2007;34(6):928-41.
106. Robertson EM, Franklin AW, Flores A, Wherry S, Buford J. African American Community Breast Health Education: A Pilot Project. *ABNF Journal* 2006;17(1):48-51.

107. Cooper CP, Gelb CA, Jameson H, Macario E, Jorgensen CM, Seeff L. Developing English and Spanish Television Public Service Announcements to Promote Colorectal Cancer Screening. *Health Promotion Practice* 2005;6(4):385-93.
108. Catalano R, Winett L, Wallack L, Satariano W. Evaluating a Campaign to Detect Early Stage Breast Tumors in the United States. *European Journal of Epidemiology* 2003;18(6):545-50.
109. Anderson JO, Mullins RM, Siahpush M, Spittal MJ, Wakefield M. Mass Media Campaign Improves Cervical Screening Across all Socio-Economic Groups. *Health Education Research* 2009;24(5):867-75.
110. Fernandez-Esquer ME, Espinoza P, Torres I, Ramirez AG, McAlister AL. A Su Salud: A Quasi-Experimental Study among Mexican American Women. *American Journal of Health Behavior* 2003;27(5):536-45.
111. Bethune GR, Lewis HJ. Let's Talk about Smear Tests: Social Marketing for the National Cervical Screening Programme. *Public Health* 2009;123(Suppl 1):e17-22.
112. Wu T, Kao JY, Hsieh H, Tang Y, Chen J, Lee J, Oakley D. Effective Colorectal Cancer Education for Asian Americans: A Michigan Program. *Journal of Cancer Education* 2010;25(2):146-52.
113. Page A, Morrell S, Tewson R, Taylor R, Brassil A. Mammography Screening Participation: Effects of a Media Campaign Targeting Italian-Speaking Women. *Australian & New Zealand Journal of Public Health* 2005;29(4):365-71.
114. Champion V, Skinner CS, Hui S, Monahan P, Juliar B, Daggy J, Menon U. The Effect of Telephone Versus Print Tailoring for Mammography Adherence. *Patient Education and Counseling* 2007;65(3):416-23.
115. Cummings GE, Francescutti LH, Predy G, Cummings G. Health Promotion and Disease Prevention in the Emergency Department: A Feasibility Study. *Canadian Journal of Emergency Medicine* 2006;8(2):100-5.
116. Costanza ME, Luckmann R, Stoddard AM, White MJ, Stark JR, Avrunin JS, Rosal MC, Clemow L. Using Tailored Telephone Counseling to Accelerate the Adoption of Colorectal Cancer Screening. *Cancer Detection & Prevention* 2007;31(3):191-8.
117. Kreuter MW, Black WJ, Friend L, Booker AC, Klump P, Bobra S, Holt CL. Use of Computer Kiosks for Breast Cancer Education in Five Community Settings. *Health Education & Behavior* 2006;33(5):625-42.
118. Kim J, Whitney A, Hayter S, Lewis C, Campbell M, Sutherland L, Fowler B, Googe S, McCoy R, Pignone M. Development and Initial Testing of a Computer-Based Patient Decision Aid to Promote Colorectal Cancer Screening for Primary Care Practice. *BMC Medical Informatics & Decision Making* 2005;5:36.

119. Geller BM, Skelly JM, Dorwaldt AL, Howe KD, Dana GS, Flynn BS. Increasing patient/physician Communications about Colorectal Cancer Screening in Rural Primary Care Practices. *Medical Care* 2008;46(9):S36-43.
120. Jerant A, Kravitz RL, Rooney M, Amerson S, Kreuter M, Franks P. Effects of a Tailored Interactive Multimedia Computer Program on Determinants of Colorectal Cancer Screening: A Randomized Controlled Pilot Study in Physician Offices. *Patient Education and Counseling* 2007;66(1):67-74.
121. Makoul G, Cameron KA, Baker DW, Francis L, Scholtens D, Wolf MS. A Multimedia Patient Education Program on Colorectal Cancer Screening Increases Knowledge and Willingness to Consider Screening among Hispanic/Latino Patients. *Patient Education and Counseling* 2009;76(2):220-6.
122. Chan EC, Vernon SW. Implementing an Intervention to Promote Colon Cancer Screening through e-Mail Over the Internet: Lessons Learned from a Pilot Study. *Medical Care* 2008;46(9 Suppl 1):S117-22.
123. Joshi A, Arora M, Dai L, Price K, Vizer L, Sears A. Usability of a Patient Education and Motivation Tool using Heuristic Evaluation. *Journal of Medical Internet Research* 2009;11(4):e47-.
124. Lai KQ, Nguyen TT, Mock J, McPhee SJ, Doan HT, Pham TH. Increasing Vietnamese-American Physicians' Knowledge of Cervical Cancer and Pap Testing: Impact of Continuing Medical Education Programs. *Ethnicity & Disease* 2004;14(3 Suppl 1):S122-7.
125. Nguyen BH, Pham JT, Chew RA, McPhee SJ, Stewart SL, Doan HT. Effectiveness of Continuing Medical Education in Increasing Colorectal Cancer Screening Knowledge among Vietnamese American Physicians. *Journal of Health Care for the Poor & Underserved* 2010;21(2):568-81.
126. Ferreira MR, Dolan NC, Fitzgibbon ML, Davis TC, Gorby N, Ladewski L, Liu D, Rademaker AW, Medio F, Schmitt BP, Bennett CL. Health Care Provider-Directed Intervention to Increase Colorectal Cancer Screening among Veterans: Results of a Randomized Controlled Trial. *Journal of Clinical Oncology : Official Journal of the American Society of Clinical Oncology* 2005;23(7):1548-54.
127. Jerome-D'Emilia B, Merwin E, Stern S. Feasibility of using Technology to Disseminate Evidence to Rural Nurses and Improve Patient Outcomes. *Journal of Continuing Education in Nursing* 2010;41(1):25-32.
128. Schroy PC, Glick JT, Geller AC, Jackson A, Heeren T, Prout M. A Novel Educational Strategy to Enhance Internal Medicine Residents' Familial Colorectal Cancer Knowledge and Risk Assessment Skills. *The American Journal of Gastroenterology* 2005;100(3):677-84.
129. Oscarsson MG, Wijma BE, Benzein EG. Nonattendance in a Cervical Cancer Screening Program -- what Happens if Women's Requirements are Met? *Health Care for Women International* 2008;29(2):183-97.

130. Wei EK, Ryan CT, Dietrich AJ, Colditz GA. Improving Colorectal Cancer Screening by Targeting Office Systems in Primary Care Practices: Disseminating Research Results into Clinical Practice. *Archives of Internal Medicine* 2005;165(6):661-6.
131. Lane DS, Messina CR, Cavanagh MF, Chen JJ. A Provider Intervention to Improve Colorectal Cancer Screening in County Health Centers. *Medical Care* 2008;46(9 Suppl 1):S109-16.