

**Provider-Targeted Interventions to Increase
Mammography Screening Among Older Women**

Report of Literature Review Findings

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**Provider-Targeted Interventions to Increase
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Executive Summary

Physician referral for mammography screening is one of the strongest predictors of mammography utilization among women of all ages. Although the risk for breast cancer increases with age, older women appear to be referred for regular mammography screening less often than younger women. To increase the number of women, particularly those ages 65 and older with Medicare, who are referred for regular breast cancer screening, the National Cancer Institute's (NCI) Office of Communication and the Centers for Medicare & Medicaid Services (CMS) have partnered to develop a health care providers outreach campaign.

As a first step in this endeavor, published literature from the past 10 years (found through a stringent MEDLINE search) and internal research documents (from NCI, CMS, and Prospect Associates) were reviewed to explore:

- 1) Why physicians are less likely to make a mammography referral to older patients
- 2) What tools would facilitate/encourage mammography referral
- 3) What are the best methods to reach providers
- 4) What provider-targeted strategies most effectively increase mammography use among older women

The review found that while physicians hold a positive opinion about mammography screening, they perceive certain barriers to screening older women, such as the likelihood of noncompliance, increased competing comorbid conditions, and lack of efficacy trials with women over age 75 to support screening guidelines. Other barriers mentioned by physicians include lack of continuity of care with older women, difficulties with followup, and forgetfulness on the part of the provider. Older women, on the other hand, were likely to cite the lack of a physician referral as the primary barrier to obtaining a

mammogram. Studies with older women demonstrate the added effectiveness of an enthusiastic physician referral. A review of methods to reach physicians showed that physicians preferred to be reached through medical journals/newsletters, educational sessions, and mass media. The review also revealed that preferred methods for educating patients on breast cancer include mass media, print materials, and teaching aids.

Five intervention studies targeted at providers and aimed at increasing mammography screening among older women were reviewed. Multifaceted interventions, which include both provider (physician and/or nonphysician) and patient-targeted strategies, were most effective at increasing mammography screening. Components of these multifaceted interventions included physician education, physician and nurse reminders (such as computer-generated prompts and chart stickers), patient education (which includes the distribution of educational material), and patient reminders.

This report recommends that provider-targeted interventions should include both physician and nonphysician provider reminders and education, as well as patient reminders and education. Efforts to educate providers should emphasize the importance of the mammography referral with older women and the importance of being enthusiastic when making the referral. Future research is recommended for testing the effectiveness of individual components of multifaceted interventions and for exploring the role of specialist physicians in referring older women for mammography screening.

**Provider-Targeted Interventions to Increase
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I. Introduction

A. Background

Breast cancer is the most common cancer and the second most common cause of death among women in the United States. In 1999, there were an estimated 215,000 newly diagnosed cases of breast cancer and an estimated 43,300 deaths due to the disease. It is currently estimated that one out of every eight women in the United States will develop breast cancer during her lifetime. Furthermore, a woman's breast cancer risk increases with age, and more than half of all breast cancer occurs in women ages 65 and older (ACS, 1999). Regular mammography screening has been shown to save lives by detecting breast cancer early, when it is most treatable.

While the gap has been narrowing over the last decade, the mammography screening rate for older women continues to be lower than the rate for younger women (CDC, 2000). Thus, because physician referral is one of the strongest predictors of mammography use (Mandelblatt & Yabroff, 1999; Sutton & Doner, 1992), and older women have increased contact with physicians (Sutton & Donner, 1992), interventions targeted at health care providers, especially physicians, are important to increasing mammography screening among women ages 65 and older.

The National Breast Cancer and Mammography Education Program (NBCMEP) of the National Cancer Institute's (NCI) Office of Communications (OC) contributes to the reduction of breast cancer mortality and morbidity through the translation and communication of breast cancer research findings that can be applied in medical and lifestyle decision-making. The NBCMEP uses a variety of methods to raise awareness and educate patients and health care providers about the importance of regular breast cancer

screening, with a special emphasis on women ages 65 and older. NCI recommends that all women ages 40 and older have a screening mammogram every 1 to 2 years and that screening should be continued for women over age 75, whose general health and life expectancy are good.

The Centers for Medicare & Medicaid Services (CMS) (previously known as the Health Care Financing Administration or HCFA), the Government entity charged with administering the Nation's Medicare and Medicaid insurance programs, is similarly interested in educating health care providers and their patients about the importance of regular breast cancer screening. In 1991, CMS expanded Medicare coverage to include the cost of a screening mammogram every other year for women ages 40 and over. In 1998, the Medicare program was further expanded to cover the costs of annual mammograms. In response to the change in coverage, CMS increased efforts to educate its clientele and their health care providers about the screening guidelines and the new Medicare benefit.

As two agencies equally interested in increasing mammography rates among the older female population, NCI OC and CMS have partnered to develop a health care providers' outreach campaign to increase the number of women, particularly those ages 65 and older with Medicare coverage, who are referred for regular breast cancer screening.

B. Scope

As the first step in developing a health care provider campaign, formative research was conducted in the form of a literature review. The purpose of this review was to scan preexisting research findings in an attempt to answer the following questions:

- What are the barriers to referring women ages 65 and older?
- What are the best ways/tools to educate providers about mammography-related issues?
- What are the best ways/tools to facilitate provider-patient communication about mammography-related issues?

- What makes providers refer older women?

The first phase of the formative research consisted of a review of in-house NCI and Prospect Associates (Prospect) studies. Because this review resulted in a limited number of relevant studies, most based on qualitative research, the review was expanded. The goal of the expanded search, in addition to answering the above-stated research questions, was to report findings on the efficacy of various provider-targeted interventions aimed at increasing mammography screening among the elderly, and ultimately to inform the development of an outreach plan targeted to health care providers. A MEDLINE search of provider-targeted interventions aimed at increasing mammography screening among the elderly was conducted, and other literature reviews held by NCI and CMS were included.

II. Methodology

A. Material Selection

The information found in this review comes from the following sources:

- NCI, CMS, and Prospect research
- CMS-funded literature reviews
- A MEDLINE search using a three search criteria (see below)
- Relevant meta-analyses identified through NCI and CMS bibliographies

In the first phase of the literature search, research conducted by NCI and Prospect was reviewed for findings relevant to provider interventions to increase mammography screening among the elderly. A list of all NCI OC research reports from 1990 to 2000 was reviewed. Studies that pertained to health care providers, mammography screening, *or* women ages 65 and older were selected. Fourteen reports were collected. After reading the reports, the reviewers excluded three because they were found to be irrelevant. In addition, Prospect reviewed its in-house collection of reports on research conducted with health professionals during the last 10 years. Three relevant reports, one for the Centers for Disease Control and Prevention's (CDC) *H. pylori* Education Initiative, one for the National Heart, Lung, and Blood Institute (NHLBI), and another for the CMS' "Y2K" Readiness Plan, were identified. The CDC and NHLBI studies were not conducted by Prospect; however, the research reports were used for Prospect's work for these clients.

In the second phase of the literature search, a MEDLINE search of research articles published from 1991 to 2001 was conducted using a three search criteria. A query was based on the combination of MeSH descriptors of "mammography" OR "breast cancer prevention" AND "provider" OR "physician" AND "elderly" OR "aged." Titles and abstracts were reviewed for articles that pertained to provider-targeted interventions to increase mammography screening among older women. Exclusion criteria included:

- Studies/interventions that were not provider-based (e.g., the intervention was geared to patients).
- Programs/research that did not exclusively pertain to older women or those that included older women in the sample, but did not report the findings by age. (See Section II.C, Terminology Definitions, for an explanation of the term “older women.”)
- Programs/research that did not pertain to mammography screening (e.g., clinical breast exam or genetic testing).
- Programs/research conducted outside the United States.
- Editorial articles.

Twenty-eight articles were retrieved and reviewed. Seven articles were excluded because they pertained to data that were collected prior to 1990. Of the remaining 21, 8 were provider-targeted intervention studies. The other studies provided descriptive information about provider and/or elderly patients’ attitudes, knowledge, and practices about mammography screening. Section III, Descriptive Findings, presents important findings gleaned from these articles.

CMS and NCI also provided three internal reports conducted by outside contractors:

- CASPRO’s *1999 Literature Review and Synthesis on Mammography Screening and Re-screening*.
- RAND’s *1999 Evidence Report and Evidence-Based Recommendations: Interventions that Increase Utilization of Medicare-Funded Prevention Services for Persons Age 65 and Older*.
- Barents Group’s *1998 Market Research for Providers and Other Partners: Final Report on Communications Between Physicians and the Medicare Programs*.

Additionally, researchers and cancer communication specialists from NCI and CMS provided lists of bibliographies of cancer communication research articles. Because the results of the MEDLINE search resulted in a limited number of relevant interventions, two meta-analyses from the bibliographies, which fit two of three MEDLINE search

criteria, were included. They assessed the effectiveness of provider-targeted strategies to increase mammography and cancer screening; however, they looked at all ages, not specifically older women. Only meta-analyses of this broader topic were considered because they provide scientific findings based on stringent selection and systematic analysis of a much larger body of research. The meta-analytic studies are Mandelblatt & Yarbrough, 1999, and Snell & Buck, 1996.

B. Material Review

All selected reports and articles were reviewed and notes taken in a systematic manner as they related to the following topics of interest:

- Descriptive findings of health care providers' attitudes, knowledge, and practices toward mammography screening for the elderly.
- Descriptive findings of health care providers' communication preferences.
- Descriptive findings of elderly women's attitudes, knowledge, and practices toward mammography screening.
- Efficacy studies of health care provider-targeted interventions to increase mammography screening among the elderly.

C. Terminology Definitions

In the interest of clarity, certain terms used frequently in this report should be defined.

Physician refers to a licensed medical doctor. Where applicable, specialty distinction, such as primary care physician (PCP), is noted. *Health care provider* (also referred to simply as *provider*) constitutes any member of the health care delivery team: physicians, physician assistants, nurses, health educators, case managers, administrative medical office staff, etc. *Nonphysician health care provider* is any member of the health care delivery team excluding physicians.

Throughout the report, the words *elderly* and *older* are used interchangeably to refer to women ages 50 and older. There is variation in the studies as to how older women are

defined; some include women ages 50 and older, while others include women ages 65 and older. When available and applicable, exact age ranges are specified.

When discussing intervention findings, *multifaceted* approaches refer to interventions that target more than one audience simultaneously. For instance, a multifaceted approach could include both a physician-targeted and patient-targeted strategy.

III. Descriptive Findings

This section summarizes relevant descriptive findings of research with physicians and older women with regard to mammography screening and breast cancer. The findings were primarily collected through qualitative research methods, such as focus groups and interviews. A total of 25 studies conducted between 1990 and 2001 were reviewed. The studies include 14 published articles, 6 NCI-funded studies, 3 CMS-funded studies, and 2 Prospect studies.

Section A, Physicians, provides findings as they relate to 1) attitudes and perceived barriers, 2) knowledge and practices, 3) communication preferences, and 4) patient education preferences. Section B, Older Women, explores 1) attitudes and barriers, and 2) communication preferences.

Summary of Findings. While physicians hold a positive view of mammography screening, barriers to screening older women include: the perception that older women are more likely to refuse, increased competing comorbid conditions, and lack of efficacy trials with women over age 75 to support screening guidelines. Other barriers mentioned by physicians were lack of continuity of care with older women, difficulties with followup, and forgetfulness on the part of the provider. Older women, on the other hand, tend to cite the lack of a physician referral as the primary barrier to obtaining a mammogram. Studies with older women demonstrate the added effectiveness of an enthusiastic physician referral. A review of methods to reach physicians showed that physicians preferred to be reached through medical journals/newsletters, educational sessions, and mass media. The review also revealed that preferred methods for educating patients on breast cancer include mass media, print materials, and teaching aids.

A. Physicians

1. Attitudes and Perceived Barriers to Mammography Screening Among Older Women.

In 1997, NCI conducted 41 in-depth interviews with general and family practice physicians attending the American Academy of Family Physicians conference to assess attitudes and perceptions toward cancer screening among older women (NCI, 1997b). The majority of physicians felt mammography was an important cancer-screening tool for older women. This is consistent with other provider research that shows that physicians, in general, hold a very positive view of mammography screening. They view it as “the best tool available to screen breast cancer” and feel that “the advantages of mammography outweigh any disadvantages.” (NCI, 1993)

Lack of scientific evidence to support mammography screening past the age of 75, and lack of consensus among the guidelines for older women were cited as barriers to mammography screening in the elderly in several studies (Tishler et al., 2000; McCool, 1994; Zapka & Berkowitz, 1992). Assumptions of efficacy of mammography screening for women ages 75 and older are usually based on observational studies and on the extrapolation of the findings from clinical trials with younger women (Tishler et al., 2000). NCI conducted a series of seven focus groups with 55 obstetricians/gynecologists (OB/GYNs) and PCPs in 1993, and found that some providers thought it was odd to have women ages 70 and older get mammography. They thought that breast lumps were easy to feel manually, making mammography less necessary. These providers wanted more research to support a guideline for regular screening for women in this age group.

Physicians cited competing comorbid conditions as a barrier to regular mammography screening with older women (Tishler et al., 2000; Zapka & Berkowitz, 1992). Care of chronic health conditions can monopolize a physician’s time, leaving little time for mammography referrals. In addition, women with comorbid conditions are at an increased risk of dying due to their comorbidities. Under such circumstances, physicians

are often less likely to emphasize preventive services (Tishler et al., 2000). During NCI's 1997 in-depth interviews with physicians, the theme of competing health concerns in older women also surfaced. One physician stated:

It could be that there are so many other complicated issues with women 65 and older. They may have multiple complicated problems that you sometimes lose sight of your screenings when you're trying to deal with congestive heart failure, hypertension, diabetes. (NCI, 1997b)

In another study, NCI (1997a) conducted two focus groups with 19 primary care physicians to study mammography screening practices and attitudes. This study found that having episodic patients (patients who do not see the physician on a regular basis) was a barrier to regular mammography screening. In the 1993 NCI focus group study, physicians discussed the erosion in the continuity of care, saying that the increased mobility of the population had made it more difficult to establish long-term relationships with patients. One PCP noted:

. . . And then there are just the women who come [because] 'I have a sore throat, I have bronchitis, I have this, I have that.' . . . And then you try and sell them on health consciousness. Nobody really resists . . . However, whether I could convince them to follow through every year is something else because so many of them are episodic patients. They come to me and they have illnesses, and then in spite of what I say—'come back'—they don't. (NCI, 1993)

Another perceived barrier cited by physicians was the belief that older women are less likely to comply with mammography referrals. Gulitz and her colleagues conducted a qualitative study with Florida health care providers in 1995 and found that some providers felt that it was impractical or of little value to discuss screening with certain women who have other competing priorities.

Poorer older women are harder to motivate . . . health [prevention] is harder to sell among this group. (Gulitz et al., 1998)

In reviewing other studies, Gulitz found additional evidence that providers are reluctant to screen patients who they feel would not find testing to be a high priority (Gulitz et al., 1995). Similarly, some participants in a focus group study with women ages 65 and older had experienced what was referred to as “patient stereotyping” by physicians; women linked this stereotyping to age and subsequent lack of a physician referral (Zapka & Berkowitz, 1992).

Physicians tended to ascribe noncompliance by older women to patient concerns over costs, issues of access, fear of discomfort, and fear of discovering cancer (Zapka & Berkowitz, 1992; Lemkau et al., 1996; Weinberger, 1992). NCI’s research confirmed that providers perceive that, among older women, fear of finding cancer and fear of cancer treatment is a salient barrier (NCI, 1993; NCI, 1997a). Physicians in NCI’s studies also noted that older women tended to have a more fatalistic attitude or to mistakenly believe that if they had not yet gotten breast cancer they never would.

They would rather not know they have cancer, because as far as they are concerned, once they have cancer, all life is over. And they are trying to hide. (NCI, 1997a)

Difficulty with followup was cited as a barrier to increasing patient compliance in some of the NCI studies (NCI, 1997a; NCI, 1990). There were noted differences in how rigorously physicians or their staff followed up on a patient after a mammography referral was made. NCI conducted 48 in-depth telephone interviews with physicians from professional medical associations and community health clinics to better understand factors affecting mammography referral rates. Many of the physicians from this study felt that the responsibility of following through belonged to the patient. A few physicians were more proactive, as one explained that he scheduled mammography screenings with the patient during the office visit (NCI, 1990). While providers in NCI’s 1997 focus

groups said they had been putting extra effort into tracking their patients' compliance, they voiced frustration over flaws in followup systems, resulting in noncompliance.

Other barriers to physician referral noted less frequently in the literature were physician self-doubt about patient educational and motivational skills, and concern over legal and liability issues (Guiltz et al., 1998). Additional barriers include physician forgetfulness, concern about inconclusive radiologist reports, and perceived low yield of mammography screening (McCool, 1994; Zapka & Berkowitz, 1992; Weinberger et al., 1992).

2. Knowledge and Practices of Mammography Screening Among Older Women

In CASPRO's 1999 *Literature Review and Synthesis on Mammography Screening and Re-Screening* on behavioral interventions to improve mammography utilization published from 1994 to 1999, physicians are reported to have certain knowledge deficiencies with regard to the risk factors associated with breast cancer. The report also finds that knowledge of guidelines was positively correlated with referral rates. In addition, OB/GYNs, younger physicians, and female physicians have higher referral rates.

In 1993, NCI conducted the *Breast Cancer Screening Consortium* survey with a sample of women ages 65 and older who were seeing a regular physician at five sites across the United States. The survey found that 81 percent of women reported receiving a mammography referral from their physician in the past 2 years, and 64 percent actually had a mammogram. In addition, when the referral came from her regular physician, the patient was more likely to obtain a mammogram. Family history of cancer did not affect the referral rates, nor was age a factor, except for women over 80. Internists (versus family practitioners), female physicians, and younger physicians were more likely to recommend a mammogram. These correlates are interrelated in that family practice physicians tend to be older and male and have patients who are poorer, with lower educational levels and less insurance coverage (Lane et al., 2000).

In a 1992–1993 retrospective chart review of women ages 60 and older seen in a family practice setting, 71 percent of the patients without a history of cancer and 65 percent of the patients with a history of cancer were referred for a mammogram. This study, however, found that only approximately one-third of the patients in both groups had complied with the referral and received the mammogram. In explaining such low compliance, the authors propose that while the physician may have suggested the test, he/she may not have encouraged the patients to follow through. It is important to note that at the time of the study Medicare did not cover annual mammograms (Blair, 1998).

Based on a 1990 survey of 129 PCPs in Los Angeles, 73 percent of physicians agreed that annual screening of women ages 65–74 was important, but only 24 percent reported actually screening these women. Similarly, 57 percent of physicians agreed that women ages 75 and older should be screened annually, but only 21 percent reported doing so. Those physicians who were Caucasian, younger, and had participated in the American Cancer Society (ACS) low-cost mammography projects were more likely to report screening older women (Roetzheim et al., 1995). However, studies show that physicians tend to overestimate their referral behavior (CASPRO, 1999); therefore, caution should be used when assessing physician compliance with guidelines based on self-reported data.

In 1998, NCI interviewed 60 general and family practitioners and internists to explore physicians' cancer-screening practices with older women. This study found that the family physician was still considered primarily responsible for cancer-screening efforts on the grounds that they see the patient more often and have a more holistic approach (NCI, 1998). Some internists felt that they were also responsible for cancer screening. However, internists with subspecialties (e.g., cardiologists, endocrinologists) were more likely to view the family physician as responsible for cancer screening (NCI, 1998).

3. Communication Preferences

Across NCI and Prospect studies, as well as Huag's (1997) meta-analysis, medical journals/newsletters, educational sessions, and mass media consistently ranked the highest as preferred sources for new medical information among physicians. In particular, physicians felt professional journals were highly credible sources of information. PCPs in CDC's *H. pylori* study cited the following journals as credible sources: *New England Journal of Medicine*, *Medical Letter*, *JAMA*, and *Annals of Internal Medicine* (CDC, 1998). OB/GYNs and family physicians from NCI's 1990 study named the following as credible sources for cancer information: *New England Journal of Medicine*, *Journal of Obstetrics and Gynecology*, *Cancer* (ACS journal), *Contemporary OB/GYN*, NCI bulletins, *British Medical Journal*, and *Family Practice* (NCI, 1990).

Physicians felt that educational sessions such as staff meetings, grand rounds, conferences, and continuing medical education (CME) seminars were especially valuable because they enabled human interaction (NCI, 1990; NHLBI, 1995; NCI, 1998; CDC, 1998). The following statement made by a physician regarding receiving new information on guidelines reflects this point:

It would mean a lot more if it came from somebody whom I trust and I work with and who practices real world medicine. If they're endorsing this and saying, 'These guidelines are good. We're doing this,' then that's going to mean a lot more and I'm likely to sit up and pay attention.

(NHLBI, 1995)

Several studies found that physicians liked receiving information through popular media (CMS, 2000; NCI, 1990; NHLBI, 1995). In 1999, CMS conducted six focus groups with physicians to ascertain the best strategies to reach health care providers regarding Y2K compliance issues (CMS, 2000). The CMS study found that consumer publications, such as the *Wall Street Journal*, were an effective way to reach physicians. In addition, many physicians felt that stories in the consumer media provided a double benefit by

concurrently educating patients and doctors. They noted, however, that some of the effects of “media blitzes” were short lived, and that sometimes the mass media inaccurately covered medical stories.

Physicians expressed mixed feelings about electronic formats. The majority of physicians in the 1995 NHLBI study did not feel that the Internet was an effective vehicle for disseminating guidelines. In addition, the Barents Group’s *Medicare Physician Communication Survey* with 416 physicians regarding their information needs found that the World Wide Web (Web) was not highly utilized by physicians. Less than half, 42 percent, of physicians had access to the Web in their office, and only 24 percent used it. Very few, 5 percent, reported a preference for receiving Medicare information via e-mails (Barents Group, 1999). However, physicians in the 1999 CMS Y2K study indicated that Web sites were most effective in educating physicians when they were well publicized, and physicians in other studies suggested the Internet was as a particularly good vehicle for educating patients (NCI, 1998; NCI, 1990).

In most studies, direct mail ranked lowest as a source of new medical information. Direct mail barely registered as a source of information for physicians that had been sent mailings during the CMS Y2K outreach program. Physicians interviewed in NCI’s 1990 and 1998 studies recommended avoiding direct mail because they were already “inundated” and “barraged” with mail. One physician noted that he gets “a foot of mail a day” and that his secretary throws away “six inches of mail before he even sees it.” (NCI, 1990) Physicians in the NHLBI study felt, however, that direct mail was an effective way to reach them if the material was eye catching, brief, and from a respected organization.

Regardless of the vehicle of dissemination, physicians felt that other physicians made credible spokespersons, especially specialists who spend all their time on a particular issue. Also, messages endorsed by professional medical societies were highly regarded by physicians. A PCP in the NHLBI study on medical guidelines stated:

An endorsement makes it somewhat more credible. It takes away a little bit of question about who is sending me this and what's their agenda. It tells me that my organization at least has given it the seal of approval. (NHLBI, 1995)

4. Patient Education Preferences

Physicians in the various NCI studies were asked which methods they preferred to use to communicate information about breast cancer to their patients. The most common methods mentioned were mass media, print educational materials, teaching aids, and one-on-one discussions. They added that media campaigns led to more receptive and proactive patients. The PCPs in NCI's 1997 focus group study noted that mass media should present clear messages. In addition, physicians in the NHLBI study felt frustrated when issues were covered inaccurately and wanted the media to be more careful in reporting on guidelines.

Physicians expressed opinions about a variety of print educational materials. Some PCPs in the 1990 NCI interviews preferred distributing take-home pamphlets and flyers to their patients. They wanted materials to be clear, brief, positive in tone, written at a low reading level, and available in bilingual versions. Physicians from the NHLBI study also said they liked to hand out clearly written materials, adding that "good ones are hard to find." Physicians in both NCI's 1990 and 1993 studies said that they found posters to be helpful at reminding both them and their patients of the importance of mammography. They also suggested that posters be placed in examination rooms, instead of lobby areas, where patients are more likely to read them. Physicians had mixed feelings about tent cards; some thought they were useful, while others said they had no room to display them. Other physicians expressed a preference for pamphlets made available in a display.

One physician in NCI's 1990 in-depth telephone interview study had a particularly useful recommendation about the distribution of educational materials:

I get pamphlets that people are peddling all the time. If I get one copy I usually throw it away. If I get a stack of 100, I carry them down to the clinic and put them out. If they are gone right away and the nurse says, 'Boy, that mammography pamphlet from NCI was really popular,' then I order more. (NCI, 1990)

In addition, the PCPs and OB/GYNs in NCI's 1993 focus groups study said they did not want educational materials containing guidelines with which they disagreed. They wanted materials that addressed the subject of cancer screening and prevention in more general terms (e.g., information that goes beyond just mammography guidelines).

Physicians expressed mixed feelings about using teaching aids to communicate breast cancer information to patients. Some physicians in NCI's 1990 interviews suggested that positive messages about mammography be printed on rubber breast models. Other physicians noted that the shower-rack cards were extremely popular. Physicians generally felt that videotapes were not a valuable teaching aid because of logistical reasons, such as lack of the appropriate equipment or lack of time to show them to patients. However, some physicians in NCI's 1993 focus groups said that they would be interested in educational videos that were brief (e.g., no longer than 5–7 minutes).

Some physicians in CDC's *H. pylori* study said they employed a one-on-one style when educating patients during office visits. Some said they used a positive approach when educating their patients on prevention, while others said they used a negative approach, such as scare tactics.

B. Older Women

1. Attitudes and Perceived Barriers to Mammography Screening

In reviewing NCI's Breast Cancer Consortium Screening studies, there appears to be a discrepancy between the reasons given by doctors for mammography noncompliance

versus the reasons given by older women. Patients were more likely to say the reason for noncompliance was because they didn't know of the benefits of mammography screening, or that their doctor had not recommended one. Physicians were more likely to say that noncompliance was due to patients' concerns with costs and fear of pain. This gap suggests that physicians underestimate the impact of their recommendation, overestimate patient resistance, and inaccurately assess the reasons women would not want to get a mammogram (Lemkau et al., 1996). Studies show that while physicians think that their patients ages 65 and older are more likely to refuse a mammogram, evidence points to the contrary. Weinberger (1992) found that older women are more likely to follow a physician recommendation for a mammogram than younger women.

2. Mammography Screening Knowledge and Practices

The CASPRO literature review (1999) found that older women had poorer breast cancer knowledge and were less likely to know that increased age is a risk factor for breast cancer. When data from a NCI's 1999 omnibus survey conducted with a nationally representative sample of 1,002 women ages 18 and older were analyzed by age group, older women were found to be more likely to hold misconceptions about risk. When asked to agree with the statement that "most women who get breast cancer have a family history," women ages 65 and older were more likely to respond that they "don't know" (NCI, 2000). An HMO survey conducted by MacDowell et al. (1996) with a representative sample of women ages 50 and older found that women who were compliant with mammography screening were more likely to agree with the statements that "a mammogram could detect a lump" and that "women don't have to die if they catch and treat breast cancer" (MacDowell et al., 2000). Sutton and Doner (1992) also found that women ages 65 and older were less likely to think they could get breast cancer in their lifetime.

The American Association of Retired Persons (AARP) conducted a survey in 1992 with a nationally representative sample of 837 women ages 65 and older. They found that knowledge of the need for a mammogram was positively correlated with income and

education and negatively correlated with age. Additionally, less than a quarter of the women (23 percent) were familiar with the 1991 change in Medicare mammography coverage (Rubenstein, 1994).

MacDowell’s 1996 HMO survey analyzed awareness levels of mammography recommendations for women ages 50 and older and corresponding mammography screening compliance rates.¹ The strongest predictors of compliance were 1) the belief that women over 50 should get mammograms at least yearly, and 2) their willingness to comply with a physician’s referral. The following table shows the breakdown of how these women responded to the question asking how often they should get a screening mammogram. For each response category, corresponding compliance rates are presented. Compliance rates were highest for those women who believed they should get a mammogram at least once a year (MacDowell et al., 2000).

“How often should a woman 50 and older get a screening mammogram?”	Percent Responding	Compliance Rate
Once a year or more frequently	83%	84%
1 to 2 years	12%	62%
2 to 3 years	2%	31%
No recommendation	3%	36%

Based on the 1991 *Physician Visit Survey*, older women have increased contact with their physicians, but are screened less often. Those women ages 65–74 had an average of 5.1 visits a year and women ages 75 and older had an average of 5.9 visits a year (versus 3.7 for women ages 45–64). Forty percent of women ages 65 and older followed mammography screening guidelines (versus 68 percent of women ages 40–49, and 49 percent for women ages 50–64). Women seen for a checkup and those seeing an OB/GYN were more likely to get screened for mammography; however, as women age, their visits to OB/GYNs tend to drop off, while their visits to specialists increase (Sutton & Doner, 1992).

¹ Compliance was defined based on American Cancer Society’s recommendation of an annual mammogram for women ages 40 and older.

3. Communication Preferences

Studies with older women not only point to the importance of the mammography referral but also to the level of enthusiasm expressed by the physician when making the referral. Fox and colleagues (1994) reported findings from a survey of a representative sample of 972 women ages 50 and older conducted in Los Angeles County in 1990. They found that “women who perceived that their physicians had some enthusiasm for mammography were more than 4 ½ times more likely than women whose physicians had no or little enthusiasm for mammography to have had one within the previous year (Fox et al., 1994).” Lemkau and colleagues (1996) also discussed the positive impact of physician encouragement on mammography compliance, citing a previous study which showed that older women who reported having received physician encouragement to obtain a mammogram were found to be 4 to 12 times more likely to have had mammograms than those who did not.

IV. Intervention Findings

This section reviews provider-targeted interventions to increase mammography screening. The first part provides an overview of provider interventions, followed by a review of findings from meta-analyses. The last part discusses the design and results of the five relevant interventions identified through MEDLINE. A brief discussion of omitted interventions is then followed by a review of the five interventions by type: physician-targeted, multifaceted, and nonphysician health care provider-targeted.

Summary of Findings. Five provider-targeted intervention studies aimed at increasing mammography screening among older women were reviewed. The one physician-targeted intervention study showed no effect on increased mammography utilization when compared to the control group. The two multifaceted provider-interventions, the Mammography Optimum Referral Effort (MORE) and the Seattle intervention, effectively increased mammography screening among their elderly population. Both of the nonphysician health care provider targeted interventions, the Ohio and New York City studies, also had a positive effect on mammography screening rates. This suggests that multifaceted interventions that include elements of provider education/reminders, patient education/reminders, and organizational change most effectively increase mammography screening among older women. It should be noted that the three meta-analytic studies did not find an increased benefit in combining provider and patient targeted interventions. However, unlike the five interventions reviewed in this report, the meta-analyses did not focus exclusively on provider interventions targeted at increasing prevention practices *among older women*.

A. Overview of Types of Interventions

Provider-targeted interventions can generally be categorized as behavioral (providing cues to action and reminders) and cognitive (providing education and feedback). Gulitz and her colleagues conducted a qualitative study of 496 PCPs (half of whom were physicians and half nurses) in 1995 to gain insight into physician preferences for strategies to increase mammography screening among the elderly. Providers expressed

preferences for the following behavioral-type of strategies: reminder tools, such as office intake questionnaire forms, mammography prescriptions, posters, and bill reminders for patients; and instruments, such as checklists for annual screenings and results, tickler card files, and computerized chart reminders. Some expressed interest in using the Agency for Healthcare Research and Quality's (AHRQ) *Put Prevention into Practice* materials (see Appendix C), which appeared to be gaining acceptance among the health care community and patients alike (Guiltz et al., 1998).

Since forgetfulness has been cited as a barrier to provider compliance with mammography referrals, a common component of interventions is a reminder system. Mammography screening reminders can be tangible, such as chart stickers or medical records flowsheets (flowsheets are usually affixed to the outside of a patient's medical record and track prevention screening services), or can be computer-generated when using computerized patient medical records. Previous studies have shown that both simple reminder systems, such as checklists, and more complex computer reminder systems improve adherence to preventive-care services (Tishler et al., 2000). Sophisticated computer reminder systems have been found to significantly increase provider compliance with prevention protocols (Weinberger et al., 1992).

Cognitive type interventions can include any form of CME and/or audits with feedback (usually medical charts are reviewed to assess cancer screening rates). Feedback can also include a financial incentive to reward compliance with guidelines.

Institution-wide administrative change interventions have shown significant long-term success in improving cancer screening rates for all age groups (Herman et al., 1995). Institutional change, also referred to as organizational change, is defined as a modification in the delivery of health care that is intended to improve preventive care services. Examples include increasing staffing or shifting staffing duties, facilitating the mammography referral process, and improving facilities or infrastructure.

B. Review of Meta-Analyses

RAND completed a meta-analytic report for CMS to assess the effectiveness of interventions to increase utilization of Medicare-funded prevention services (including mammography) for patients ages 65 and older. An expert panel reviewed journal articles of scientific studies from 1979 to 1999 (those with random assignment to an intervention and a control group). The study found that patient financial incentive and patient reminders most effectively increased mammography screening, followed by organizational change. The next most effective interventions were provider education and provider reminders. According to the RAND study, multifaceted mammography interventions did not produce greater effectiveness than single interventions. It should be noted, however, that the RAND study reviewed few provider-targeted interventions aimed at increasing mammography practices *exclusively* among older women.

Mandelblatt and Yarboff (1999) found that provider-targeted interventions to increase mammography screening among all women are generally effective regardless of approach. Behavioral interventions increased screening by 13.2 percent. Cognitive interventions increased screening by 18.6 percent. “Sociological” interventions, defined as nurse-based or altered care delivery interventions, increased screening by 13.1 percent. Combined behavioral and cognitive strategies had an effect of a 21 percent increase in mammography screening. They also found that strategies that exclusively targeted patients were as effective as strategies that exclusively targeted providers. Surprisingly, strategies that targeted both providers and patients concurrently were less effective than targeting providers or patients alone.

Snell and Buck (1996) found that interventions targeting either physician or patient were equally successful when assessing intervention effectiveness at increasing cancer screening services. Studies that targeted both groups, however, were less effective. The greatest impact was found for interventions targeting the physician both during the patient visit (reminders and flowsheets) and outside the patient visit (provider education

and/or audit with feedback). Screening behavior improved when physicians received more than one, but no more than three, interventions.

C. Provider-Targeted Interventions to Increase Mammography Screening Among the Elderly

Eight studies were found that evaluated a provider-targeted intervention aimed at increasing mammography screening among the elderly. Among closer inspection, three studies were identified as being of limited usefulness and omitted (see next section). The remaining five studies are analyzed in detail in this section. Of these five studies:

- One is a physician-targeted intervention,
- Two are multifaceted interventions (targeting more than one audience),
- Two are nonphysician health care provider-targeted interventions.

One of the nonphysician health care provider-targeted interventions could also be regarded as multifaceted because both office and nursing staff were involved, and patient education was included. Appendix B provides a table that summarizes these five intervention studies.

1. Omitted Intervention Studies

Three of the initial eight studies were found to be of limited usefulness and were not included in the review. In the first study, Hueston and Stiles (1994) conducted a followup study based on an earlier chart-reminder study to increase Pap smear compliance among patients ages 50 years and older at a rural family practice setting in Kentucky. The goal of the followup study was to test if chart prompters, which were effective at increasing Pap smear utilization during the intervention, had a long-term effect of increasing the utilization of other cancer screening services, including mammography. This study was considered too removed from the scope of this review because it did not include an intervention designed to increase mammography utilization.

In the second study, Preston and her colleagues (1998) reported promising findings for CMS' MORE physician office-based intervention but did not use a control group. Fortunately, Preston conducted another evaluation of the MORE program using a control group a year later. (This subsequent study is included in this review.)

In the third study, Burton and colleagues (1997) conducted a study at The Johns Hopkins University as part of CMS's Medicare Preventive Services Demonstration to assess if including a preventive visit benefit as part of the Medicare coverage improved health outcomes for older women. This intervention, which only showed modest positive results, can be more accurately described as an institutional change intervention and not a provider-targeted intervention.

2. Physician-Targeted Intervention

Of the five studies selected for review, the physician-targeted intervention study showed no effect on increased mammography screening when compared to the control group. Hillman and colleagues (1998) conducted a randomized controlled trial to evaluate the impact of audit with feedback and financial incentives on physician compliance with cancer screening rates for their female population ages 50 and older. The study was conducted at a large Philadelphia Medicaid HMO from 1993 to 1995. Half of 52 primary care sites were randomly assigned to the intervention and half were randomly assigned to usual care. The intervention consisted of semiannual chart audits to check compliance rates with screening guidelines and feedback. Additionally, some providers received financial bonuses based on performance. By the end of the intervention, screening rates had doubled overall from 24 percent at baseline to 50 percent equally for both the intervention and the control group. Authors propose that national trends toward increased preventative care could explain the increase in the control group.

3. Multifaceted Interventions

Both of the multifaceted provider-targeted interventions were effective at increasing mammography screening among their elderly populations. One took place in an inner-city Seattle hospital (Taylor et al., 1999) and the other in Connecticut clinics participating in CMS's MORE program (Preston et al., 2000).

The goal of the Seattle intervention was to increase mammography screening among its noncompliant patient population of women ages 50 to 74. The goal of the MORE intervention was to increase biennial mammography screening among women ages 65–74 with Medicare. Female patients in the Seattle study were followed for a 15-month period, from September 1995 to November 1996. Patients in the MORE intervention were followed from March 1, 1996, to August 31, 1996.

Two Seattle clinics were randomly assigned to the intervention; one clinic, which continued with its usual care, was used as the control group. In Connecticut, 32 PCPs were recruited for the MORE intervention. Fifty-five PCPs were selected as a matched control group.

The Seattle intervention consisted of the following components:

- Physician education/academic detailing:
 - A chief resident discussed individually with physicians the effectiveness of mammography, screening guidelines, breast cancer risk factors, and patients' barriers to screening.
- Computer-generated provider mammography prompt:
 - A computer-generated prompt alerted providers of patients who had never been screened or were out of compliance with mammography guidelines.

- A nurse prompt attached to the patient chart:
A form was attached to the front of a patient's chart. If patients agreed to a mammogram, the nurse highlighted the prompt form and attached a radiology mammography request form.
- Patient education in the form of a motivational video and a pamphlet:
The pamphlet addressed key issues about breast cancer and mammography screening using a question-and-answer format. Time permitting, patients were invited to view a motivational video. The video used a "talk show" format with three women panelists and a female physician moderating their discussion of ways to overcome barriers to mammography screening.
- Patient telephone or postcard reminders:
Women who scheduled a mammogram appointment were contacted to remind them of their visit.

The MORE intervention consisted of the following components:

- Custom patient education brochures (personalized with office practice information) with a tear-off form where the physician documented the referral:
The tear-off form served to remind the physician to have a discussion about mammography screening with his/her patients.
- Chart stickers.
- Cancer screening flowsheets.

Both studies found a statistical difference between the intervention group and the control group. Nearly half (49 percent) of the women in the intervention completed a mammogram within their first visit, compared to 22 percent for the control group. The mammography compliance in the MORE group increased to 73.1 percent after the intervention from 62.7 percent at baseline. The control group's rate remained essentially the same.

4. Nonphysician Health Care Provider Targeted Interventions

The two nonphysician health care provider interventions were also effective at increasing mammography screening rates among their elderly populations. One intervention targeted nurse-practitioners in a New York City public hospital primary care setting (Mandelblatt et al., 1993); the other intervention targeted nurses and office staff at a public teaching hospital in Ohio (Herman et al., 1995). The goal of the New York study was to increase breast and cervical cancer screening among elderly (over age 65), African American, and low SES women attending a public hospital primary care clinic. Eligible women were followed from May 15 to November 15, 1990. The goal of the Ohio study was to increase breast cancer screening among the hospital's female patients ages 65 and older. Eligible patients were followed from October 1, 1989 to March 21, 1990.

A public hospital primary care clinic in the New York study was assigned to receive the intervention, and a comparable clinic with "usual care" was used as the control group. The intervention consisted of a nurse-practitioner approaching eligible women in the waiting room prior to their physician appointments to recruit them for mammography, or nurse counselors referring their patients for mammography.

In the Ohio study, three group practices were randomly assigned to the following three conditions:

- Provider education (control group):
 - Physicians and nurses were provided with a monograph and had the option of attending a lecture on preventative services.
- Provider education AND patient education by a nurse using a pamphlet:
 - The pamphlet was entitled *What Every Woman Should Know About Mammography*.
- Provider education AND patient education by a nurse using a pamphlet AND reassignment of ancillary staff roles to expedite administrative support AND a flowsheet reminder:

A nurse or nursing assistant filled out and attached a radiology request form to the patient chart.

In the New York study, both groups had an 18 percent mammography screening rate at baseline. Afterward, the intervention group had a 40 percent rate while the control group remained the same. Authors attribute the success to possible gender-related issues and/or the superiority of nurse screenings. In the Ohio study, the third group had the highest mammography screening rates after the study at 30.9 percent in comparison to the second group that had a 28.4 percent screening rate and the control group, which had a 19.4 percent screening rate. The second and third groups showed a statistically significant difference from the control group. These groups, however, were not statistically different from each other.

V. Conclusion

A. Summary of Findings

While a physician referral is one of the strongest predictors of increased mammography screening among women, including older women, physicians are less likely to recommend a screening mammogram to their older patients. This report reviewed qualitative and quantitative research findings to explore: 1) why health care providers are less likely to make a mammogram referral to older patients, 2) what tools would facilitate/encourage mammography referral, 3) what methods are best to reach physicians, and 4) what provider-targeted strategies are most effective at increasing mammography compliance among older women. The findings were derived from the review of 24 published articles, 6 NCI-funded studies, 4 CMS-funded studies, and two Prospect studies conducted from 1990 to 2001.

Research with older women was reviewed to gain a better understanding of the barriers and motivators to mammogram screening compliance. The studies showed that older women are less likely to be aware of the increasing risk of breast cancer with age. They cite the lack of a physician referral as a common barrier to obtaining a mammogram. In addition, a physician referral is much more effective when delivered with enthusiasm and encouragement. While older women have increased contact with their physicians allowing for more opportunity for mammography referrals, their screening rates are lower than their younger counterparts.

Many reasons were cited as potential barriers among providers in making mammography referral to older patients. These include:

- The misconception that older women are more likely to refuse mammography screening because of attitudinal barriers such as fear of discomfort and fear of discovering cancer.
- Older women have competing comorbid conditions.
- Lack of efficacy trials with women over 75.

- Conflicting guidelines for screening older women (e.g. some recommend age cut-off, while others do not).
- Lack of continuity of care.
- Difficulties with follow-up.
- Provider forgetfulness.

A review of methods to reach physicians showed that physicians preferred to be reached through medical journals/newsletters, educational sessions, and mass media. The review also revealed that preferred methods for educating patients on breast cancer prevention include mass media, print materials, and teaching aids.

Multifaceted interventions that include both provider (physician and/or nonphysician) and patient-targeted strategies effectively increase mammography screening. The two multifaceted provider-interventions (MORE and Seattle) effectively increased mammography screening among their elderly population. The Seattle intervention, which took place in an inner-city clinic, resulted in a higher increase, doubling its baseline screening levels. The MORE intervention, which had a much higher baseline level, increased its screening rate roughly 10 percent. Provider reminder systems, such as chart stickers and flowsheets, and patient education, such as pamphlets and brochures, were components of both interventions.

Both of the nonphysician health care provider-targeted interventions also had a positive effect on mammography screening rates. In the New York and Ohio studies, nurses were used to recruit and/or educate elderly women. New York's nurse practitioner study was able to double its mammography screening rate among a group of poor, African American, elderly women. In the Ohio study, the group that used a nurse to provide patient education (group 2) was essentially just as effective at increasing mammography rates (roughly 10 percent higher) as the group with additional administrative support (group 3).

It should be noted that the three meta-analytic studies did not find an increased benefit in combining provider- and patient-targeted interventions. However, unlike the five interventions reviewed in this report, the meta-analyses did not focus exclusively on provider interventions targeted at increasing prevention practices *among older women*.

B. Limitations

Any methodological limitations in the original research apply to the findings in this report. Many of the descriptive findings, and especially those derived from NCI's in-house research, were based on qualitative research, such as focus groups and in-depth interviews. Because qualitative research involves a small number of participants that are not randomly selected, the findings are not representative of a larger population. Some of the quantitative studies in the literature were of limited generalizability because the sample was selected from a unique pool of people.

Additionally, some of the research was conducted in the early part of the 1990s. Significant changes in guidelines and Medicare mammography benefits occurred throughout that decade. Thus, findings from the early 1990s should be interpreted with care because factors affecting the delivery of health care have changed significantly since that time.

Lastly, this literature search uncovered a limited number of studies evaluating provider-targeted interventions aimed at increasing mammography screening among the elderly. The low number of studies and the variation in study design makes drawing conclusions challenging. For instance, in some studies older women were defined to be 50 years of age and older, while in other studies they were defined to be 65 years of age and older. Some studies were conducted in hospital settings while others were conducted in clinic settings. In addition to study design differences, interventions were also conducted in varying sites throughout the United States. Though such differences have been noted throughout the report, care should nonetheless be used in drawing conclusions from such a low number of studies with such variation.

C. Recommendations for Campaign Planning

Based on the findings derived from this literature review, the following recommendations have been developed to help guide NCI/CMS in the planning of a health provider outreach campaign to increase mammography screening among older women. Although further research in certain areas is being recommended (see next paragraph), the report provides a good foundation for campaign planning.

As mentioned earlier, while multifaceted interventions are effective, little is known about the effectiveness of individual components and ideal conditions for success. For instance, is a computer-generated prompt more or less effective at reminding physicians to refer older patients for mammography versus a medical chart reminder? Is an audit with feedback most useful when done quarterly or biannually?

Another area that has received little attention with regard to older women and mammography referral is the specialist physician. As women age, they tend to see specialists more often. Because of the increased contact with specialists, more research needs to be focused towards identifying the best methods to reach specialists with effective educational materials for older patients.

Based on the findings in this literature review, the following recommendations are being proposed:

1. Message Development

Based on a close review of barriers and opportunities and effective strategies that impact the mammography referral, the following three message themes should be incorporated in campaign development:

- 1) A physician referral is one of the strongest predictors of mammography screening among all women, including older women.
- 2) Older women are not as resistant to mammography screening as physicians believe.

- 3) Enthusiasm at the time of making the mammography referral may increase patient compliance.

2. Audiences

Because of the effectiveness of multifaceted interventions, campaign planners should consider targeting both health professionals and older women. The health professional audience should comprise all members of the comprehensive care unit, including physicians, nurses, nurse practitioners, physician assistants, and possibly the administrative staff. In the absence of research about specialty physicians' attitudes and behaviors towards recommending mammograms to older women, campaign efforts should focus on the general physicians and internists.

Although the analysis of unique demographic segments of older women was outside the scope of this literature review, studies have found that minority and low SES women have lower mammography screening rates and higher breast cancer mortality rates (Mandelblatt et al., 1993). As was found in the New York study, nonphysician provider interventions appear to hold promise in reaching such populations (Mandelblatt et al., 1993).

3. Tactics

While it is unclear which components of a multifaceted approach are the most effective, successful tactics appear to include some combination of provider education, provider reminders, patient education, patient reminders, and institutional change. Therefore, it is recommended that multiple and overlapping tactics be employed.

For provider education, developing CME and other continuing educational programs is a promising tactic to consider. CME programs can be developed as audio or multimedia interactive sessions. Audio programs can be distributed as CD-ROMs/cassettes and listened to at the office, in the car, or at home. Multimedia CME programs can be made available (and well publicized) on NCI's Web site or on a CD-ROM. Other tactics could

include educational sessions or poster sessions at professional conferences and articles in publications that reach health professionals.

Provider reminders can take the shape of chart stickers, computer prompts, and flowsheets to track preventative services. Reminders can be designed for use by any member of the medical care team, from triage through physician.

Research suggests that when they are educating/encouraging patients to get a mammogram, physicians should provide their patients with educational print materials, such as pamphlets or handouts. Therefore, it is recommended that NCI/CMS promote the use of existing patient materials during the campaign efforts.

Patient reminders can also be included to reinforce the importance of scheduling and/or keeping a mammography appointment. These can take the form of a letter mailed to the home (possibly with an incentive), an e-mail, or a phone call reminder by office staff. NCI/CMS can develop customizable materials that can be adapted by clinics for use as patient reminders.

It is outside the scope of the campaign to implement institutional change in clinical practices. However, NCI/CMS can develop a tip sheet or brochure for physicians or administrators summarizing the types of institutional changes that have been shown to increase mammography screening rates. Examples of effective institutional changes include altering nursing staff functions to include prevention education and facilitating the process of obtaining a mammogram. Such a tip sheet would be most effective if supported by references to published, peer-reviewed articles to provide more credibility to the findings and recommendations.

The AHRQ's *Put Prevention into Practice* program, which was suggested by physicians as a promising approach, contains elements of both provider and patient education and reminders. It is recommended that this program be studied in more detail for successful

strategies, materials, and potential partnership opportunities. See Appendix C for more information.

4. Dissemination Strategies

To reach physicians with campaign messages and materials, it is recommended that professional associations be used for education and material dissemination and that subspecialty associations be included those efforts. Placement of articles, print ads, and public service announcements in association newsletters, in journals, and on Web sites, as well as exhibiting at professional conferences, should be considered. If placement on Web sites cannot be secured, NCI/CMS can investigate the possibility of placing banner ads that would link the user directly to NCI's Web site. Mass media is a recommended method for reaching both the health professional and public audiences.

The findings in this literature review indicate that when distributing materials, the use of direct mail is strongly discouraged, as well as is the distribution of single copies.

5. Evaluation Strategies

As evidenced by this literature review, there is a scarcity of rigorous evaluation studies that assess the effectiveness of provider-targeted interventions to increase mammography screening among the elderly. It is unclear if this is due to a lack of such programs or a lack of evaluation studies of such programs. Regardless, current and future interventions should be thoroughly evaluated to further contribute to this body of knowledge.

Ideally, outcome and impact evaluation studies should employ a scientific research design, consisting of random assignment to control and intervention groups, where subjects in the intervention group are compared to subjects that receive "usual care". With a large national campaign, it is advisable to pilot test the program on a small scale. When assignment to a control and intervention group is not feasible, using a quasi-experimental pre-test/post-test design is recommended. A pre-test is conducted prior to participation in an intervention to assess baseline levels of mammography screening

rates. After the intervention is concluded, result of the pre-test are compared to post-test results to assess if there have been any significant changes in screening rates. In addition to outcome/impact evaluations, it is recommended that program planners conduct a process evaluation to ensure that the program was implemented as planned and that participants were in fact exposed to the intervention.

Appendix A:
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**Appendix B:
Provider-Targeted Interventions to
Increase Mammography Use
Among Older Women**

Provider-Targeted Interventions to Increase Mammography Use Among Older Women

Intervention	Goal	Design	Intervention Description	Results
<p>Physician-targeted</p> <p>1995, Medicaid HMO Intervention, Philadelphia. (Hillman et al., 1998)</p>	To increase cancer screening rates among women ages 50 and older	26 PCPs randomly assigned to intervention and 26 randomly assigned to usual care	Semiannual feedback and financial incentives	Rates doubled overall (from 24% to 50%) in <i>both</i> the control and intervention group. Intervention had no effect.
<p>Nonphysician HCP-targeted</p> <p>1995, Case Western Reserve Intervention, Ohio. (Herman et al., 1995)</p>	To increase breast cancer screening compliance among women ages 65 and older	Three parallel group practices at a public teaching hospital each assigned to three conditions	<ol style="list-style-type: none"> 1) Provider education 2) Provider and patient education 3) Provider and patient education plus administrative support 	30.9% of the women in group 3, 28.4% of women in group 2 and 19.4% of women in group 1 were offered a mammogram.
<p>Nonphysician HCP-targeted</p> <p>1990 Nurse-Practitioner Intervention, New York City. (Mandelblatt et al., 1993)</p>	To increase mammography screening for poor, elderly (ages 65 and older), black women	Two comparable NYC public hospital primary care clinics. At control clinic, usual care	NP recruited eligible women for mammography prior to physician visit	At baseline, both groups had a 18% mammography screening rate. Afterwards, the intervention group had a 40% rate while the control group remained the same.
<p>Multifaceted</p> <p>1995-1996 Inner-City Clinic-Based Intervention, Seattle. (Taylor et al., 1999)</p>	To increase mammography screening among inner-city women ages 65-74	Two clinics received intervention, one clinic usual care	Physician computer prompt, nurse flowsheet, patient education material (video/pamphlet), bus passes and patient reminders	49% of women in the intervention group received a mammogram versus 22% for the control group.
<p>Multifaceted</p> <p>1996 CMS's MORE (Mammography Optimum Referral Effort) Intervention, Connecticut. (Preston et al., 2000)</p>	To increase biennial mammography use among women with Medicare ages 65-74	32 PCPs recruited for the MORE program and 55 selected for matched control group	Custom patient education brochures w/tear-off form, chart stickers, flowsheets, and audit with feedback based on claims (not chart review)	MORE group went from 62.7% at baseline to 73.1%; the control group remained essentially unchanged at 69%.

Appendix C:

**The Agency for Healthcare
Research and Quality's (AHRQ)
*PUTTING PREVENTION
INTO PRACTICE*
Program**

The Agency for Healthcare Research and Quality ***PUTTING PREVENTION INTO PRACTICE* Program**

Put Prevention Into Practice (PPIP) is a national program to improve delivery of appropriate clinical preventive services. PPIP materials are derived from the evidence-based recommendations of the *U.S. Preventive Services Task Force*.

Purpose

PPIP tools enable doctors and other healthcare providers to:

- Determine which services their patients should receive.
- Facilitate the implementation of the delivery of clinical preventive services.
- Make it easier for patients to understand and keep track of their preventive care.

Background

The U.S. Department of Health and Human Services' Office of Disease Prevention and Health Promotion (ODPHP) launched PPIP in 1994 to improve implementation of the recommendations of the U.S. Preventive Services Task Force. In 1998, management of the project was transferred to the Department's Agency for Healthcare Research and Quality (AHRQ, formerly the Agency for Health Care Policy and Research). PPIP is now part of AHRQ's integrated program in clinical prevention.

Reducing Barriers

PPIP aims to reduce barriers to the effective delivery of clinical preventive services:

- **Clinician barriers.** Lack of prevention training, lack of "self-efficacy" (confidence that preventive interventions can make a difference), lack of time, confusion due to conflicting recommendations, lack of knowledge about new tests, inadequate reimbursement for prevention, and liability concerns or patient demand.
- **Office barriers.** Lack of knowledge, motivation, readiness for change, or support among office staff, clinical setting focused on illness rather than prevention, and inadequate office systems for tracking delivery of and followup for preventive services.
- **Patient barriers.** Lack of knowledge or motivation, anxiety about procedures and possible results, inconvenience, costs, and unrealistic expectations about benefits of some services.

Available Materials

PPIP materials are:

- Based on research-tested interventions for improving the delivery of preventive services in primary care settings, and on focus group testing with clinicians, office staff, and patients.
- Developed with the cooperation of many public and private institutions, including Federal agency experts, and contributors from academic institutions, State departments of health, professional groups, and voluntary organizations.

- Available in print as well as online for a variety of different audiences. A description of materials and availability are provided under [Tools and Resources](#) and [Ordering Information](#).

Internet Citation:

About PPIP. Put Prevention Into Practice, May 2000. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/ppip/ppipabou.htm>

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