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# Literature Review of Effective Reminder Letter Strategies used in Screening Programs

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# Literature Review of Effective Reminder Letter Strategies used in Screening Programs

## Introduction

Sending program-based reminder letters to women who have had a Pap test 27 months previously is an established strategy of the Victorian Cervical Cytology Registry (VCCR), aimed at the maintenance and increase of cervical screening rates in Victoria.<sup>1</sup> The efficacy of this strategy has been well documented both in Australia and abroad (see section below). In order to ensure that the current reminder letter being sent to Victorian women is up-to-date in terms of international best practice, a literature review was undertaken.

The literature review was conducted using two key behavioural science research databases: PsychInfo and Medline (restricted to 1990 to 2004). A selection of keywords was entered into each database, which resulted in 86 articles retrieved by PsychInfo and 145 by Medline. The keywords and phrases used were: “Pap test OR Pap smear AND letter”, “screening AND reminder”, “screening AND reminder AND cervical”, “screening AND reminder AND letter”, “reminder AND letter”, “framing AND screening”, “prospect theory AND “screening”. As the number of articles that pertained directly to cervical screening reminder letters was limited, the scope of the review was expanded to include reminder letter strategies related to breast screening as well. Articles were limited to those that documented studies conducted within Westernised countries in order to maximise applicability to the Australian context, although it must be acknowledged that the British and American health systems do vary from the Australian system in some distinct ways.<sup>2</sup> After duplicate articles were removed, and abstracts read for relevance, 30 articles remained and formed the basis of the review.

Three overall themes emerged from the articles: (a) the efficacy of reminder letters in screening programs, (b) message framing and letter content, and (c) strategies that incorporate a reminder letter. The report is structured around these themes, with subheadings below each. The literature review concludes with recommendations for developing a reminder letter based on the available evidence.

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<sup>1</sup> It is also known that many GPs and gynaecologists within Victoria maintain their own reminder systems and send out reminder letters to women who are due for a Pap test.

<sup>2</sup> For example, in the UK women are assigned a GP based on geographical location. In the US, women can register with a Health Maintenance Organisation (HMO) that is connected to their health insurance plan, but are able to choose the GP they see (see Mainous, Baker, Love, Gray, & Gill, 2001).

## Efficacy of Reminder Letters

The efficacy of reminder letters as a strategy to maintain and increase cervical screening rates has been well documented both in Australia (e.g., Mills, Simpson, Shelley, Turnbull, 1994; Mitchell et al., 1991) and internationally (e.g., Mayer, Clapp, Bartholomew & Elder, 1994; Reeves & Remington, 1999). The current literature search identified two reviews of this efficacy literature. In a review of the most effective strategies for delivering both breast and cervical screening to women in primary care, Kupets and Covens (2001) found that of all the strategies reviewed, manual and computer generated reminders appeared to be the most effective approach in the implementation of breast and cervical cancer screening to women.

Tseng, Cox, Plane and Hia (2001) undertook a meta-analysis of both the published and unpublished literature between 1966 and 2000 for randomised controlled trials that investigated the efficacy of reminder letters in increasing cervical cancer screening rates. They found ten articles that matched their inclusion criteria, including one unpublished study. When the results of all studies were combined, the pooled odds ratio revealed that patients who had received a reminder letter intervention were significantly more likely to return for a Pap test than those who did not receive a letter (OR = 1.64, 95% CI = 1.49 to 1.80). However some differences were identified depending on the sample of women that participated. The studies that had evaluated women from lower socio-economic groups had a lower rate of response to the intervention (OR = 1.16, 95% CI = 0.99 to 1.35) compared to those studies using mixed socio-economic groups of women (OR = 2.02, 95% CI = 1.79 to 2.28).

In addition to these review papers, two other papers will be mentioned for the additional information they lend to the evidence of efficacy. A study by Somkin et al. (1997) provides some evidence that the addition of a reminder tag placed on a woman's medical record in addition to a reminder letter sent directly to the woman, is slightly more efficacious in terms of the uptake of Pap tests, than a reminder letter sent to the woman alone. Finally, a study by Buehler and Parsons (1997) conducted with 441 women in Canada, provides evidence to suggest that a simple invitation/reminder letter is not sufficient to motivate women who have never or infrequently screened, to obtain a Pap test.

## Message Framing and Letter Content

### *Overview of Framing*

A review was recently conducted of the various ways information can be presented (or framed) that communicates the risks and benefits of treatment and screening options in the clinical setting (Edwards, Elwyn, Covey, Matthews & Pill, 2001). Edwards et al. (2001) concluded that there is a paucity of evidence available in this field. However, the largest intervention effects were found when information was presented in terms of relative risks rather than absolute risks. In addition, although the results of the studies reviewed were not

statistically significant, loss-framed messages were more effective than gain-framed messages in the uptake of screening initiatives. These two framing effects will be discussed in more detail below along with other framing and content strategies employed in the studies examined in this literature review.

### *Relative Risk Reduction versus Absolute Risk Reduction*

There is evidence to suggest that the way risk reduction information is communicated can have an effect on screening behaviour. Relative risk is the ratio of the rate at which disease occurs in people who are exposed to the presumed cause, to the rate among those not so exposed. Absolute risk is the actual difference in occurrence of the disease between exposed and un-exposed groups (Ahlborn & Norell, 1990). When applied to information on cervical screening, relative risk and absolute risk can be used to express the reduction in risk of developing cervical cancer that attending for regular Pap tests provides. Although these two ways of presenting risk reduction information are essentially expressing the same benefit to be gained from carrying out the screening behaviour, the actual figures that result from the calculations of both look quite different. It is this difference that is presumedly at the basis of one type of risk reduction information being more effective than the other at motivating health related behaviours such as cervical screening. For an example of risk reduction expressed in both relative and absolute terms see Appendix A.

Two recent studies conducted in Australia and New Zealand reported that when the benefits of screening were framed in terms of relative risk reduction, women were more likely to support screening activities compared to when the benefits were expressed in terms of absolute risk reduction. Young, Davey and Ward (2003) surveyed 701 women who attended GP clinics in Sydney. They were asked to indicate their level of support for each of four fictitious mammography screening programs proposed for government investment. Each of the four program scenarios reported the equivalent expected benefits, expressed as one of four outcomes: (a) relative risk reduction, (b) absolute risk reduction, (c) numbers needed to screen, and (d) number of cases detected for additional death to be avoided. The proportion of participants who indicated they “definitely would support funding” was significantly greater when benefits were expressed as a relative risk reduction compared to the other three outcomes. Women who were younger (< 50 years old) and more highly educated (completed year 12 or a tertiary degree) were more likely to be susceptible to the ‘framing effect’. Overall, 44.2% (n = 310) of the women were influenced by the framing effect.

Sarfati, Howden-Chapman, Woodward and Salmond (1998) also found that the presentation of information in relation to the benefits of cancer screening was most acceptable when presented as a relative risk reduction. A telephone survey was conducted in New Zealand with 306 participants. Respondents were provided with information on the benefits of three supposedly different screening tests for an unspecified cancer, however the same benefit was actually presented in three different ways: relative risk reduction, absolute risk

reduction and numbers needed to screen to save one life (see Appendix A). Respondents were most likely to indicate they would be willing to have a Pap test when the benefits of screening were presented as a relative risk reduction (80%), and most likely to reject screening when the benefits were presented as numbers needed to screen to save one life (43%). In addition, significantly more participants endorsed the program expressed in relative risk reduction terms (80%) compared to the program expressed in absolute risk reduction terms (53%).

### *Prospect Theory: Loss versus Gain*

Prospect Theory is a descriptive model of risk-related decisions that was originally applied to the gambling literature (Curry & Emmons, 1994). However, this theory has since been applied in a variety of research areas, including decision making related to screening and treatment options in the health field. According to this theory, loss-framed messages are more effective than gain-framed messages in persuading individuals to perform a health behaviour that is perceived to be risky (Banks et al., 1995; Edwards et al., 2001). Undergoing medical procedures that are detection based, such as breast examinations or Pap tests, are perceived as risky activities as there is the risk that signs of disease will be detected (Banks et al.). Thus, using the example of cervical screening, which is perceived as a risky behaviour (i.e., risk of finding abnormal cells), a woman presented with information that emphasised the *loss of benefits* she might experience if she were not to have a Pap test (e.g., failing to detect cell changes that may lead to cervical cancer and loss of life), would be more likely to undertake screening than if presented with information that emphasised the *gain of benefits* she might experience if she were to have a Pap test (e.g., detecting cell changes early so that her life may be saved). Unfortunately, this literature review was unable to identify any studies that focused on cervical screening behaviour, however several recent studies have examined the effects that a loss-frame approach to information presentation can have on women's breast screening behaviour.

The earliest of these studies was conducted with 133 women aged 40 years and older who had a history of not screening as regularly as recommended (Banks et al., 1995). The women were divided into two groups and each group presented with an educational video message about breast cancer and mammograms that was either loss-framed or gain-framed (see Appendix B for a list of the loss versus gain-framed messages presented). The women were assessed at both 6 and 12 months for whether they had obtained a mammogram. At 6 months, more women in the loss-framed group (45.3%) had obtained a mammogram compared to the gain-framed group (33.8%), although the difference was not statistically significant. However, at twelve months the gap had widened, with the loss-framed group (66.2%) obtaining a significantly higher rate of mammograms compared to the gain-framed group (51.5%).

A similar study was conducted with 752 low-income women of various cultural groups with the majority being African-American (43%), Anglo (27%) and Latino (25%) (Schneider et al., 2001). The women were recruited from housing developments and health clinics and randomly assigned to either a loss-framed or gain-framed 10 minute video message, which was either specifically targeted at their ethnic group or was a general multicultural video. As predicted, loss-framed multicultural messages were found to be the most effective for all women in terms of the number of women who obtained a mammogram, but especially so for the Latino and Anglo women. Follow-up framing effects were found to be stronger closest to the time of the video presentation, with 41% of all participants having obtained mammograms by 6 months compared to only an additional 16% by 12 months.

Another study was conducted with medically uninsured and underinsured predominantly white women in rural Florida aged 50 to 64 years, however instead of using a video, the message medium was a telephone call (Abood, Coster, Mullis & Black, 2002). Two women callers were trained on information framing approaches and provided with scripts when making the calls to the participants. Women in the intervention group ( $n = 116$ ) who received a telephone call with a loss-framed message were compared to women in the control group ( $n = 27$ ) who received a standard message. Analyses revealed that women who received the loss-framed message were six times more likely to obtain a mammogram ( $OR = 6.6$ ,  $p < 0.0001$ ). When the effect of screening status (whether the woman obtaining the mammogram had already been screened within the last two years or whether it was her first screen within that period) was controlled for the result remained significant.

Finally, a study conducted by Finney and Iannotti (2002) sought to determine whether women who had a previous family history of breast cancer would be more responsive to negatively framed messages rather than those women who had no previous family history of breast cancer. Both the loss- and gain-framed reminder letters were based on the standard letter already used in the rural hospital through which 929 women were recruited, and included similar messages to those used in the study by Banks et al. (1995) described above. Appointments made for mammograms were recorded at 1 month and 2 months after the letters had been posted. Although the duration of recruitment had been scheduled for 12 months, the intervention was withdrawn at the 10 months mark due to concerns that the gain-framed letter was eliciting lower response rates than the standard letter. At the two measurement points, women with a family history of breast cancer differed in their responses to the letters, whereas the women who had no previous family history responded similarly to each letter version. At the one month mark, significantly more women with a family history responded to the loss-framed letter than the standard or gain-framed, however by the 2 month mark, significantly more of these women responded to the standard letter than the loss-framed or gain-framed letters. The gain-framed letter was always the letter least strongly responded to by the women with a family history of breast cancer. Thus, taking the evidence as a whole, there appears to be support for the efficacy of loss-framed reminder letters compared to gain-framed letters.

### *Prospect Theory: Benefit versus Harm*

Prospect Theory also posits that framing probabilistically equivalent information either positively or negatively will shift the reference point from which the outcomes of alternative options are judged (i.e., whether they are perceived as benefits or harms (Kahneman & Tversky, 1979, cited in Edwards et al., 2001)). Two studies were found in the literature review that tested the effects of presenting breast screening information in terms of benefits or harms. Lewis, Pignone, Sheridan, Downs and Kinsinger (2003) conducted a study with 179 women aged 35 to 49 years who attended a medical practice at the University of North Carolina. Participants were randomly assigned to one of three five minute videos that described the benefits or harms in an imaginary cohort of 1,000 women who had undergone regular screening for 10 years. The three videos were logically equivalent but differed in the way the probabilities of potential outcomes were framed: positive, negative or neutral (both positive and negative) (see Appendix C for a list of the three message comparisons). Three questions were asked of the participants both before and after the video intervention to test change in their perceptions of harms and benefits of mammography and accuracy of their mammography related knowledge. Before seeing the videos the majority of women answered the knowledge questions incorrectly. After seeing the videos, a higher proportion of women answered the questions correctly, but this was not due to the framing effect as an equivalent proportion of women in each video group improved. Women's perceptions of the benefits and harms of mammography did not change after seeing the video, regardless of which version they viewed.

From a review of the literature related to harm and benefit, Kendall and Hailey (1993) found that while a minimal amount of fear arousal can motivate action, too high a level of fear arousal will actually have a detrimental effect and lead to avoidance behaviours. In addition they found that minimal fear arousal can only be effective under certain conditions. These conditions include the identification and prescription of certain behaviours that will successfully reduce the fear. Thus the researchers constructed three letters with various levels of fear arousal messages (reassuring, anxiety provoking and standard prompt) and tested these with 150 women aged 36 to 80 years (mean age 54.3 years) who were due for a mammogram. The reassuring and anxiety provoking letters contained the same information as the standard letter with additional sections added. The section added to the reassuring letter was entitled "The encouraging facts about breast cancer". It provided information about the magnitude of the disease problem as well as a strong reassurance about the effectiveness of mammograms as an early detection procedure. It also encouraged women to overcome the usual barriers to obtaining a mammogram such as anxiety, embarrassment and anticipated discomfort. The anxiety provoking letter was equal in length to the reassuring one, and contained a section entitled "The worrisome facts about breast cancer". It contained information on the seriousness of breast cancer as a health threat and stressed women's vulnerability to the disease. However it also offered reassurances that a reduction in the risk of negative consequences might be achieved by participation in breast screening.

The outcome variables for this study were whether or not the woman scheduled an appointment for a mammogram within a month of receiving the letter, and whether or not the woman actually kept her appointment and had a mammogram (Kendall & Hailey, 1993). Overall, 45% of the women scheduled appointments, which included 54% of those who had received the reassuring letter, 42% of those who received the anxiety-provoking letter, and 38% of those who had received the standard letter. Chi-square analyses revealed that these differences were not statistically significant. Overall, 96% of the women who had scheduled an appointment, kept the appointment, however again there were no differences between the letter groups in the number of women who kept their appointments. A pairwise comparison between the reassuring letter group and the standard prompt did find a significant difference for both scheduling and keeping appointments, with the reassuring letter group scheduling and keeping more appointments. A discriminant analysis found that there were differences between the women who did and did not schedule and keep appointments. Women with a positive family history of breast cancer, who received the reassuring letter and were over 50 years of age were more likely to schedule and keep an appointment. However these latter results should be viewed with caution as the group sizes were small (approximately 50) and the groups were not matched for demographic and other important variables that may have confounded the results.

Thus, from the limited evidence available, the framing of breast screening information in terms of benefits or harms has little effect on the accurate perception of information or on screening behaviour. However, the use of fear arousal messages may have a detrimental effect on motivating screening behaviour, and it is important to present messages of reassurance that people can reduce the risks associated with cancer by engaging in screening behaviours.

### *Tailored Letters*

An American study sought to test whether constructing two types of personalised letters (personalised form letter and personalised tailored letter) would effect screening rates of low income women (Jibaja-Weiss, Volk, Kingery, Smith & Holcomb, 2002). Six focus groups were conducted initially to develop the content of the letters. Both letters were written using information gathered from focus groups and language taken from the American Cancer Society's screening recommendations. The letters were of one page in length, written in both Spanish and English, aimed at sixth grade reading ability, and signed by the health centre director. Both letters were personalised as they included each individual woman's name and address. The personalised form letter (PF) contained generic information about risk factors for both breast and cervical cancer, the importance of screening and early detection, and an invitation to attend for a pelvic examination and a Pap test or a breast examination and a mammogram. The personalised tailored letter (PT) contained certain common elements with the PF letter (e.g., reference to risk factors), however the letter content for each woman in the PT group was modified to accommodate specific risk-factor data extracted from the woman's medical chart. This modified content contained one to six of six risk factor themes: age,

race/ethnicity, family history, number of children, body mass index, and smoking status. Thus an example of a PT letter might read, “Ms. Smith, you may be at-risk of breast cancer because you are aged over 50 years and are a smoker”. Versions of both letters were rigorously tested via two rounds of focus group testing.

African-American, Mexican-American and non-Hispanic white women (n = 1574) who were registered as patients at two urban community health centres participated in this study (Jibaja-Weiss et al., 2002). To be eligible, women were those who had not had a Pap test or mammography during the past two years. The study tested the difference between those women who received a PF letter, a PT letter, or no letter (control group) in whether they made an appointment for a screening service and whether they received that service within 12 months after recruitment. Interestingly, women in the PT group had the lowest Pap test screening scheduling rate (39.7%) compared to women in the PF group (53.3%) and the control group (44.7%). In terms of attending for cervical screening, significant group differences were also found. Of women in the PT group, 23.7% obtained a Pap test (representing 59.6% of those who had scheduled an appointment), compared to 43.9% of the PF group (representing 82.5% of those scheduled) and 39.9% of the control group (representing 89.2% of those scheduled). Thus, this study’s results suggest the investment of additional effort into the personal tailoring of letters to an individual woman’s risk factors is not warranted, and may in fact decrease the likelihood of a woman scheduling and attending a cervical screening appointment, at least for low-income women.

Another study was conducted with 3,887 older women in North Dakota, aged 65 to 80 years (McCaul & Wold, 2002). This study tested the effectiveness of three types of reminder letters on mammography screening rates for women who had not screened within the last 2.5 years. The three letter interventions were (a) a simple reminder letter, (b) a simple reminder letter accompanied by a persuasive communication emphasising risk, and (c) a tailored reminder letter that was tailored to individual barriers to screening that participants had indicated in a previous correspondence. The simple reminder letter was one page in length, was addressed to each individual and was signed by the Medical Director of the Health Care Financing Administration peer review organisation in North Dakota. It stated “Breast cancer remains the number one cause of cancer deaths for women in North Dakota” and noted that mammography can be an effective tool for early detection and is a partially financed service by Medicare. The letter encouraged women who were due for their next screening to schedule an appointment as soon as possible. A toll free number was included at the bottom of the letter. Medicare records were used to identify eligible women. The risk letter was identical to the simple reminder letter, but included information about age being a risk factor in addition to a picture of an older woman with a headline stating “Your risk of breast cancer increases with age”. The tailored letter participants were first mailed a postcard that asked women to indicate whether they had had a mammogram in the last two years, and if the woman checked “no”, she then was asked to explain why, using an open-ended response format. The information collected from these returned postcards was then used to construct a tailored letter to each

woman that was identical to the simple reminder letter except that it included a paragraph that addressed the barrier to screening that she had indicated on her postcard.

The results for this study revealed no statistically significant differences between the three types of intervention letters when compared to a control condition where no letter was sent. Thus, not only had the tailored letter intervention showed no advantage over the other two intervention letters, there had been no effect of any letter type over no intervention. The lack of any effect in this study may be explained by the assumption that older women may be more resistant to reminder letters than younger women, or that women who do not regularly screen are harder to motivate by mailed correspondence than regular screeners. Regardless of the explanation, tailored letters do not appear to be a strategy worth pursuing in the breast or cervical screening area.

### *Modified versus Standard Letters*

A large ( $n = 12,240$ ) randomised controlled trial was conducted in Sweden to determine which of three reminder letter interventions was most effective in increasing the number of women who attended for cervical screening (Eaker, Adami, Granath, Wilander & Sparen, 2004). One intervention tested the efficacy of a modified letter versus the standard reminder letter. Eligible women (between the ages of 25 to 59 years, and who had not had a Pap test during last 3 years) were sent either a standard invitation letter or a modified invitation letter. The standard letter printed on ordinary white stationery contained a brief description of the Pap test, who it was designed for, how the test was conducted, how to schedule an appointment, and that test results were classified and sent by mail. The modified letter was identical to the standard version, however an additional brochure was included that had been specifically designed for the intervention by cancer specialists (see Appendix D for a complete list of brochure contents). The brochure included far more detailed information on the test than in the standard letter, including diagrams of the women's reproductive organs, additional information about the stages of abnormal cells and that the test cannot detect sexually transmitted diseases. Only a minor effect of borderline significance was found for the intervention (standard versus modified letters). The proportion of women attending for a Pap test within the five months since the intervention increased from 25.7% for those with the standard letter to 27.0% for those with the modified letter (difference 1.3%, 95% CI -.03 to 2.9). Thus a modified letter with additional detailed procedure and disease information appeared to have little impact on screening attendance.

### *Physician versus Program Letters*

Two studies were found that have tested whether receiving a reminder letter written on different types of letterhead with different signatories would effect screening rates for mammography services. A study by Mayer et al. (2000) tested whether a reminder letter sent from a woman's personal physician rather than from the mammography centre she had

previously attended would have any effect on screening rates. Participants were 1,562 women aged 50 to 74 years who were due for their annual mammogram. The authors found that although both strategies increased attendance over no letter being sent, the rates of attendance for the two interventions conditions differed by only 1%. These results were supported by an earlier study that was conducted to test the effectiveness of reminder letters sent from a woman's personal physician compared to those sent from the director of the mammography program they were enrolled in (Taplin et al., 1994). Once again, no differences were found between the two letter versions.

## **Additional Strategies**

In addition to studies that tested variations of letter framing and content, studies were also identified that tested interventions that incorporated a reminder letter alongside other initiatives. These are briefly summarised below.

### *Letter plus a Postcard*

One study tested whether a reminder letter followed by a postcard reminder sent two months afterwards, would increase mammography screening rates (Taplin et al., 1994). Women included in the study were 1,500 women aged 50 to 79 years who were currently enrolled in a mammography program in the USA. The follow-up postcard had a dramatic impact, almost doubling the odds of participation in the screening program compared to the reminder letter alone. Unfortunately no studies could be identified that used a follow-up postcard intervention for cervical screening within Australia, however the results of this study suggest that this strategy might warrant piloting within the Victorian context.

### *Letter plus a Phone Call*

Four studies (including the study by Eaker et al., 2004 already discussed above) were found that tested the effectiveness of a reminder letter intervention teamed with a follow-up phone call in terms of the increase in screening rates and the costs involved. In a study by Saywell et al. (1999), five different strategies were tested on 808 participants for compliance with requests to obtain a mammogram and cost effectiveness. The five intervention strategies compared to a control group were: (a) in-person invitation by a physician, (b) in-person invitation plus an invitation letter from their physician, (c) invitation letter from their physician only, (d) telephone call only, and (e) telephone call plus an invitation letter from their physician. Three of the interventions had significantly better compliance rates: in-person invitation, in-person invitation plus a telephone call, and telephone call plus an invitation letter. However, when analysed for cost-effectiveness, the telephone call plus invitation letter strategy was the clear leader, achieving a 35.6% compliance at a marginal cost of \$0.78 per 1% increase in women screened. A study by Vogt, Glass, Glasgow, La Chance, & Lichtenstein,

2003) supported this result, also finding that compared to three other intervention strategies, a reminder letter followed up by a telephone appointment call, was the most cost-effective approach to screening rarely screened women.

Finally, a study conducted with 395 women who were members of a health maintenance organisation in Philadelphia compared three interventions designed to increase mammography screening: (a) a birthday card reminder (the usual method), (b) a personalised letter from the medical director plus materials promoting mammography, and (c) a telephone call that incorporated a reminder message, counselling about breast cancer issues and the process of scheduling appointments (Davis et al., 1997). Women who received the telephone call intervention had the highest rate of screening (28%), followed by the birthday card group (15%) and the letter intervention (9%).

Overall, the addition of a phone call reminder seems to improve screening attendance rates, although this strategy may be more suited to interventions originating at the GP level rather than a statewide program level in Victoria.

### *Letters with Appointments*

Two studies were identified that had incorporated a screening appointment time within their respective reminder letters. One study was based at the University of Western Australia's Lockridge General practice, which is situated in a socio-economically disadvantaged area of Perth (Pritchard, Straton & Hyndman, 1995). Women patients aged 36 to 69 years ( $n = 757$ ) were selected from the practice's records and randomly allocated to one of four groups: (a) tagged medical record, (b) letter-only, (c) letter with an appointment, and (d) control. The letter-only group received an invitation to screen including details about how to organise an appointment for a Pap test. The appointment-letter group received an invitation to screen with a set date and time for a Pap test. The tagged medical record group was offered a Pap test every time they visited the practice within the timeframe of the study. The researchers found that compared to the control group, the tagged medical record group was 1.31 times more likely to obtain a Pap test (95% CI = 0.78 to 2.22,  $p = 0.31$ ), the letter-only group was 1.66 times more likely (95% CI = 1.00 to 2.75,  $p = 0.051$ ), and the letter with appointment group was 2.14 times more likely (95% CI = 1.28 to 3.59,  $p = 0.004$ ). Thus the addition of an appointment date and time in a reminder letter was shown to be an effective strategy in increasing the uptake of Pap tests within a GP practice setting.

A study set in the UK tested an appointment based letter strategy to try to encourage women to undertake a mammogram once they had not attended the appointment time set in their initial invitation letter (Stead, Wallis, Wheaton, 1998). The 2,229 women were split into two intervention groups. One received a second letter with an open invitation asking them to phone the screening unit to make another appointment, and the other received a second letter with another fixed appointment time. The results revealed a significant difference in the response rate, with 12.3% of the open invitation women making and attending an

appointment, and almost double that figure, 22.8% of the fixed appointment group attending their appointment.

Although this strategy appears to be promising, the practical application of it to the Victorian cervical screening context is problematic for two reasons. Firstly reminders are sent out from a central registry not directly connected to any medical practice that would send out the reminders with appointments. Secondly women are able to choose their Pap test provider and thus they may not necessarily return to the clinic they had their previous Pap test at for their next test.

### *Multiple Letters*

Hayes, O’Herlihy, Hynes and Johnson (1999) conducted a study to determine whether sending two follow-up reminder letters to women who had previously been sent an invitation to undergo a mammogram, would impact on the uptake rate. Recruitment occurred in North Dublin and participants were 1,310 females aged 50 to 64 years who had not responded to an initial invitation letter. Follow-up reminder letters were sent to these women at 6 weeks and 12 weeks after the initial invitation letter had been issued. The initial invitation letter was responded to by 60.7% of the women, with the second letter receiving an additional 17.9% response and the third receiving 7.6%. Women aged 55 to 64 years were more likely to respond to the first, second and third letters than those aged 50 to 54 years. The researchers calculated that the response rate to the second letter was cost effective, however the lower response rate to the third was not.

The study by Eaker et al. (2004) discussed previously, incorporated a multiple reminder letter intervention with several message mediums. This large (n = 12,240) randomised controlled trial was conducted in Sweden to determine which of three reminder letter interventions was most effective in increasing the number of women who attended for cervical screening. Initially, eligible women (between the ages of 25 to 59 years, and who had not had a Pap test during last 3 years) were sent either a standard invitation letter or a modified invitation letter (see Appendix D for contents of modified letter). Half of the women who did not present for a test within approximately five months of the first intervention were randomly selected to receive the second intervention, a reminder letter. The reminder letter was identical to the standard invitation letter, however it included a prompt that they had already received a prior invitation and that this was a reminder, with the word “reminder” printed in capital letters in the heading. Again, half of the women who did not present for a test approximately two months after the second intervention were randomly selected to receive a reminder telephone call, the third intervention.

As reported above, only a minor effect of borderline significance was found for the first intervention (standard versus modified letters). The proportion of women attending for a Pap test within the five months since the intervention increased from 25.7% for those with the standard letter to 27.0% for those with the modified letter (difference 1.3%, 95% CI -.03 to

2.9). However, the second reminder intervention increased the proportion of women attending from 6.3% (standard) to 15.5% (modified) (difference 9.2%, 95% CI 7.9 to 10.5). Finally, the phone reminder intervention had the largest relative impact, with the proportion of women attending increasing from 10.0% (standard) to 41.4% (modified) (difference 31.4%, 95% CI 26.9 to 35.9). The combination of receiving a modified invitation, a reminder letter and a phone call almost doubled attendance within 12 months. Thus, at least in this study, multiple reminders using different mediums (mail and phone) and including additional Pap test information (modified version) appeared to have an effect on screening behaviour.

The results of these two studies reviewed suggest that multiple reminders may be a beneficial strategy to pursue, however further studies are required to determine the most effective medium in the cervical screening area and consistency in the optimum number of repeated reminders required.

### *Combined Program Letters*

An innovative intervention strategy was tested in the US with 2,471 women aged 40 years and over who were enrolled at a health service provider organisation (Burack, Gimotty, Moncrease & Dews, 2003). This study was conducted to determine if individual screening program effects could be found when a reminder letter sent to women regarding when their next mammogram was due was combined with a reminder regarding having a Pap test. A medical record reminder was also placed in the patient's chart. Compared to the women who had received a mammogram-only reminder letter, the women who had received a combined mammogram and Pap test reminder letter were more likely to obtain a Pap test by the 12 month follow-up (30% compared to 23%, adjusted OR = 1.39, 95% CI = 1.07 to 1.89) and attend a gynaecology appointment. Pap test history was unassociated with completion of a Pap test during the study period. Interestingly, the rate of women taking up mammograms did not increase or decrease with the intervention, neither did visits for other primary health care issues. The findings of this study provide preliminary evidence for a strategy in which separate women's health programs joining collaboratively can enhance the screening rates for at least one of the programs included. However the fact that a medical record reminder intervention was used alongside the reminder letter intervention in this study may have confounded the effects of the letters themselves.

# Recommendations

## Limitations of this Review and its Recommendations

Before a set of recommendations is presented, the limitations of this literature review must be considered as they may have implications for the efficacy of the recommendations themselves. The key limitation of this review was the limited number of papers that could be retrieved that had been conducted in the cervical screening area. By far the majority of the studies discussed were based on samples of women who were considering breast screening information and decisions to screen. However, it would be logical to expect that the way women react to the presentation of screening information in relation to the detection of breast cancer could also apply to cervical cancer, although that there may be some differences. The other limitation is that many of the studies included in this review were based on American samples. Again the generalisability of the results of these studies to the Australian health system context needs to be kept in mind.

## Recommendations for Changes to the Existing VCCR Reminder Letter

- Express benefits of the Pap test as a relative risk reduction rather than an absolute risk reduction, numbers needed to screen, or numbers needed to prevent a death (see for e.g., Edwards et al., 2001).
- Construct the reminder letter to reflect loss-framed rather than gain-framed messages (see for e.g., Banks et al., 1995).

## Recommendations for Future Letter Related Strategies

- Whether the existing reminder letter is changed or not, consider an investment in a follow-up letter that is sent three months after the initial reminder letter (see Eaker et al., 2004; Hayes et al., 1999), or a follow-up postcard sent two months after the initial reminder letter (see Taplin, et al., 1994).
- An alternative follow-up method that appears to have worked well in the breast screen area is a telephone call reminder (see Saywell et al., 1999; Davis et al., 1997), although this is probably not practical as a statewide program strategy but more relevant to the level of GP interventions.
- PapScreen Victoria might consider the benefits to be obtained by joining collaboratively with BreastScreen Victoria to pilot the effectiveness of a joint reminder letter (see Burack et al., 2003), although there is limited evidence available for this strategy at this stage.

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# Appendix A

## Comparison of Relative Risk Reduction to Absolute Risk Reduction

(Sarfati, Howden-Chapman, Woodward, & Salmond, 1998)

This study provided the example of a hypothetical population in which some people regularly participated in a non-specified screening program. It was presumed that the screened group had the test every two years and that the population was followed up for a period of 10 years. Over this time 3 people per 1000 in the unscreened group and 2 people per 1000 in the screened group died of the unspecified cancer. Based on this information, three different risk scenarios were constructed: relative risk reduction, absolute risk reduction, and number of people needed to be screened in order to prevent one death from cancer. The former two are presented below for comparison.

Risk Reduction Type	Calculation	Interpretation of Risk Information
Relative Risk Reduction	<p>A = Incidence of cancer death of women who do screen regularly = 2/1000</p> <p>B = Incidence of cancer death of women who do not screen regularly = 3/1000</p> <p>= (B-A)/B</p> <p>= (.003 - .002)/.003</p> <p>= .001/.003</p> <p>= .33 or 33%</p>	If you have this test every two years, it will reduce your chance of dying from this cancer by around one third, over the next 10 years.
Absolute Risk Reduction	<p>= B - A</p> <p>= .003 - .002</p> <p>= .001 or 0.1%</p>	If you have this test every two years, it will reduce your chance of dying from this cancer from around three in a thousand, to around two in a thousand over the next 10 years.

## Appendix B

### Comparison of loss- versus gain-framed video messages

(Banks, Salovey, Greener, Rothman & Moyer, 1995)

Loss-Framed	Gain-Framed
We will show that failing to detect breast cancer early can cost you your life	We will show that detecting breast cancer early can save your life
Although all women are at risk for breast cancer, there is something you can do that increases your risk of dying from it	Although all women are at risk for breast cancer, there is something you can do to increase your chances of surviving it
For this reason, when you avoid getting a mammogram, you are failing to take advantage of the best method for detecting breast cancer early	For this reason, when you get a mammogram, you are taking advantage of the best method for detecting breast cancer early
If cancer has spread, it is more likely to be fatal	If a cancer has not spread, it is less likely to be fatal
Another disadvantage of failing to find a tumour early is that you may have fewer treatment options and may need more radical procedures	Another advantage of finding a tumour early is that you are more likely to increase your treatment options and may need less radical procedures
The bottom line is, when you fail to get regular mammograms, you are not doing your best to detect breast cancer in its early stages	The bottom line is, when you get regular mammograms, you are doing your best to detect breast cancer in its early stages

## Appendix C

### **Comparison of the positive, negative and neutral message frames used in video presentations (Lewis, Pignone, Sheridan, Downs, & Kinsigner, 2003)**

#### **Neutral Presentation of Benefit:**

Of 1,000 women getting mammograms every year for 10 years ...  
1 woman's life is extended because she got a yearly mammogram and...  
999 women's lives are not extended because they got yearly mammograms.

#### **Positive Presentation of Benefit:**

Of 1,000 women getting mammograms every year for 10 years ...  
1 woman's life is extended because she got a yearly mammogram.

#### **Negative Presentation of Benefit:**

Of 1,000 women getting mammograms every year for 10 years ...  
999 women's lives are not extended because they got yearly mammograms.

#### **Neutral Presentation of False Positive Worries:**

700 women did not experience a false positive mammogram and ...  
300 women experienced a false positive mammogram.  
100 will be upset after the false positive and...  
200 will not be bothered by the false positive.

#### **Positive Presentation of False Positive Worries:**

700 women did not experience a false positive mammogram.  
200 women will not be bothered by the false positive result.

#### **Negative Presentation of False Positive Worries:**

300 women experienced a false positive mammogram.  
100 will be upset after the false positive.

# Appendix D

## **Description of the contents of the brochure used in the modified intervention letter**

**(Eaker, Adami, Granath, Wilander & Sparen, 2004)**

The brochure was entitled: “A small examination of great importance”.

It included the following:

- Type of cancer the Pap test is supposed to protect against
- That the Pap test is a preventive measure
- Why it is important to have a Pap test when invited
- At which ages and with what time intervals women are invited to have a Pap test
- How the Pap test is taken
- How women receive the test results
- How precursor stages are followed up and that eventual treatment is simple
- When not to have a Pap test (during menstruation, etc.)
- That the test is taken free of charge by a midwife
- That the test can be and often is taken in opportunistic screening
- That the test cannot detect sexually transmitted diseases or other types of cancer
- Illustrative pictures and drawings of the female body showing the location of the cervix.