Evaluating mammographic screening recruitment letters: part I - the summary report

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Evaluating Mammographic Screening
Recruitment Letters

Summary Report
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for
NSW Breast Cancer Screening Units
NSW Program for Mammographic Screening
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**Executive Summary**

This report presents the results of an evaluation of the letters currently used, by NSW Breast Cancer Screening Units, to recruit women for their first mammogram or to remind women to attend for subsequent biennial mammograms.

**Types of Letters Used**

Four types of letters are currently used by the Screening Units:

1. **Initial recruitment letters** - are used by all seven of the Screening Units.
2. **Recruitment non-response prompts** - are used by three of the seven Screening Units.
3. **Biennial reminder letters** - are used by four of the seven Screening Units.
4. **Reminder non-response prompts** - are used by two of the seven Screening Units.

The letters were evaluated against three sets of criteria: presentation, comprehensibility and content criteria. The actual criteria included in each set are outlined below, accompanied by a summary of the performance of the existing letters. The selection of the criteria is discussed in more detail in the main body of this report.

**Presentation Criteria**

It was considered that all the recruitment and reminder letters used by the Screening Units should meet the following presentation criteria:

1. Put the key points at the beginning of the letter.
2. Avoid using symbols.
3. Visually emphasise the key points of the letter.
4. Repeat the key points of the letter.
5. Include a title explaining the letter.
6. Use question-based paragraph headings.

**Performance of the existing letters**

1. All the letters put the key points first.
2. All the letters avoided using symbols.
3. Only 5 of the 19 letters visually emphasised the key points of the letter.
4. Only 7 of the 19 letters repeated the key points of the letter.
5. Only 1 of the 19 letters included a title explaining the letter.
6. None of the letters used any paragraph headings.

**Recommendation**

Improving the presentation of the letters, in accordance with the criteria outlined above would be likely to result in greater ease of comprehension, greater readership, greater retention of the information, greater attitude change and, ultimately, greater attendance for mammographic screening among women receiving the letters.
Comprehensibility Criteria
It was considered that all the recruitment and reminder letters used by the Screening Units should meet the following comprehensibility criteria:
1. Have all sentences written in the positive voice.
2. Have an average of 4½ or less characters per word.
3. Have an average of 15 or less words per sentence.
4. Have all sentences written in the active voice.
5. Have a Flesch-Kincaid reading grade of 6 or less.

Performance of the existing letters
1. All the letters were written entirely in the positive voice.
2. Average word length was very consistent across the letters, at about 4½ characters per word.
3. Average sentence length was varied, ranging from 14.2 to 24.6 and with an average of 20.2 words per sentence.
4. The proportion of sentences written in the passive voice was varied, ranging from 0% to 55% and with an average of 23.5% of sentences written in the passive voice.
5. The Flesch-Kincaid reading grade levels varied widely across the letters, ranging from 6.2 (fairly easy) to 10.8 (difficult) and with an average of 9.2 (fairly difficult).

Recommendation
Shortening the average sentence length and eliminating sentences written in the passive voice would reduce the reading grade of the letters and, therefore, would be likely to result in greater readership, retention and comprehension among women receiving the letters.
Content Criteria - Health Belief Model Criteria
It was considered that the initial recruitment letters, the recruitment non-response prompts and the biennial reminder non-response prompts used by the Screening Units should include information relating to the following Health Belief Model content criteria:
1. The severity of breast cancer, or a fear message.
2. Individuals' susceptibility to breast cancer.
3. The benefits of having regular mammograms.
For the biennial reminder letters, information relating to only criteria 2 was considered necessary. It was considered that information relating to the potential costs associated with having regular mammograms should be covered only in the accompanying brochure, where they could be put into perspective against the potential benefits.

Performance of the existing letters
Regarding the Health Belief Model content criteria, the letters appeared to concentrate mostly on individuals’ susceptibility to breast cancer and the benefits of having regular mammograms. Some of the letters mentioned the severity of breast cancer and very few of them discussed any potential costs associated with having regular mammograms. However, there was much variation in the actual information items relating to each factor contained in the letters.

Recommendation
In general, it was considered that including more information in the letters regarding the severity of breast cancer would be likely to lead to more women attending for mammographic screening. In addition, it was felt that it would be beneficial to standardise the actual information included in the letters. The recommendations regarding the inclusion or exclusion of individual items of information in each type of letter are included in the main body of the report.
Content Criteria - PRECEDE-PROCEED Model Criteria

It was considered that all the recruitment and reminder letters used by the Screening Units should include some information relating to each of the following PRECEDE-PROCEED content criteria:

* Predisposing factors.
* The efficacy of having regular mammograms.
* Enabling factors.
* Reinforcing factors.

However, the individual information items recommended for each type of letter did vary - these exact recommendations are included in the main body of the report.

Performance of the existing letters

Regarding the PRECEDE-PROCEED model criteria, almost all of the letters did contain information relating to predisposing, enabling and reinforcing factors and to the efficacy of regular mammograms. However, as with the Health Belief Model criteria, there was much variation in the actual information items relating to each factor contained in the letters.

Recommendation

It was felt that it would be beneficial to standardise the actual information included in the letters. The recommendations regarding the inclusion or exclusion of individual items of information in each type of letter are included in the main body of the report.

Conclusions

It is recommended that a gold standard set of letters be developed for use by all of the NSW Breast Cancer Screening Units. This set of letters would include one of each of the four types of letter discussed earlier. It is recommended that these letters be developed in accordance with the presentation, comprehensibility and content criteria discussed in this report.

It is considered that revising the existing letters in these ways would lead to greater readership of the letters, to greater comprehension and retention of the information contained in the letters, to a more positive attitude towards having regular mammograms and, ultimately, to greater uptake of the offer of free mammograms among women receiving the letters.
**Introduction**

**Rationale**
Many factors can affect the effectiveness of written education materials at encouraging individuals to engage in screening behaviours: the way the materials are presented can affect the likelihood of them being read, their credibility and how much of the information is retained; the comprehensibility of the materials can affect how well the information is understood, remembered and acted upon; and the content of the materials obviously needs to address all the relevant issues.

Much research has been conducted to investigate ways to prepare written education materials in such a way as to maximise the likelihood of those materials being read, understood, believed, remembered and acted upon\(^1\). This document explains the selection and application of the criteria used to evaluate the mammographic screening recruitment letters used by NSW Breast Cancer Screening Units and the results of that evaluation.

**Which Letters Were Evaluated?**
The seven NSW Breast Cancer Screening Units which are actively recruiting women for screening were asked to provide a copy of all the letters and brochures they use to recruit women for their first mammogram or to remind women to attend for subsequent biennial mammograms. These seven Units are the Western Breast Screening Unit, South West Mammography Screening and Assessment Service, Southern Sydney and Illawarra Breast Screening Service, North Coast Breast Screening Unit, Northern Breast Screening, Hunter Breast Cancer Screening Project and Central and Eastern Sydney Breast X-Ray Programme. A variety of types of letters were used by the different Units:
* **Initial recruitment letter** - sent to women aged 50-69 years via the electoral register, aimed at women who have not had a mammogram.

* **Recruitment non-response prompt** - sent to women who had not attended for a mammogram, or notified the Unit that they had already had a mammogram, in response to the initial recruitment letter. The Units that used these prompts all had two versions: one which was sent shortly after the initial recruitment letter and one which was sent out after a more lengthy period.

** Biennial reminder letter** - sent to women who have had a mammogram with the Unit approximately 2 years ago. It would also be sent to women registered with the Unit's reminder service even if their previous mammogram was conducted elsewhere.

* **Reminder non-response prompt** - sent to women who had not attended for a mammogram in response to the biennial reminder letter.
Table 1 indicates which Units provided versions of each type of letter. The Units were each assigned a code letter and will be referred to consistently by this code letter throughout this document.

Table 1: The types of letters used by each Screening Unit.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit A</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
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<tr>
<td>Unit B</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
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<tr>
<td>Unit C</td>
<td>_</td>
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<td>_</td>
<td>_</td>
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<tr>
<td>Unit D</td>
<td>_</td>
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<tr>
<td>Unit E</td>
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<tr>
<td>Unit F</td>
<td>_</td>
<td>_</td>
<td></td>
<td></td>
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<tr>
<td>Unit G</td>
<td>_</td>
<td>_</td>
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<td>_</td>
</tr>
</tbody>
</table>

How Were The Evaluation Criteria Selected?

There is a large body of literature which explores the impact of content and design characteristics on the changes effected in individuals’ knowledge, attitudes and behaviour by written education materials\(^1\). Theories, such as McGuire’s Communication Persuasion Model, discuss the process by which an educational message can result in behaviour change\(^2\). According to McGuire, this process involves a series of steps:

- Being exposed to the message;
- Attending to the message;
- Being interested in the message;
- Comprehending the message;
- Acquiring the skills necessary to yield to the message;
- Yielding to the message;
- Retaining and retrieving the message;
- Engaging in the behaviour proposed by the message.

McGuire’s model proposes that written education materials must be effective at each of the early stages in order to produce changes in individuals’ knowledge, attitudes and behaviour. In other words, written education materials should be presented in such a way as to maximise the number of people who will see them, read them, be interested in them, understand them, learn from them, believe them and remember them.
However, the effectiveness of written education materials is not determined solely by their presentation and design. The way the education message is worded is also likely to affect the success of the education material at achieving the desired behaviour change. Two of the major theories of behaviour change relevant to the field of health promotion are the Health Belief Model and the PRECEDE-PROCEED models\textsuperscript{3-5}.

The Health Belief Model states that an individual's preparedness to engage in a desired health behaviour is related to the perceived severity of the related disease, their perception of personal susceptibility to the disease and the perceived trade-off between the costs and benefits associated with engaging in the behaviour\textsuperscript{3,4}.

The PRECEDE-PROCEED model of health promotion suggests that three types of factors influence the uptake and maintenance of any health behaviour. These are predisposing factors, which increase or decrease the individual's motivation to change; enabling factors, which help or hinder the individual's attempts at behavioural change and reinforcing factors, which increase or decrease the likelihood of a behavioural change being maintained\textsuperscript{5}.

Therefore, based on the three theories outlined above, the existing letters and brochures were analysed in relation to three sets of criteria: presentation, comprehensibility and content criteria. Each of these sets of criteria are discussed in more detail below.
The Presentation Criteria

How Were the Presentation Criteria Selected?
Based on a large-scale review of the literature regarding the impact of design characteristics on the effectiveness of written education materials, the following presentation criteria were established. These criteria have been demonstrated to be associated with the increased effectiveness of written education materials in the following ways.

* **Having a title to explain the materials** - The addition of a title to text has been found to lead to improved recall, when compared to recall of text without a title.

* **Putting the key points first** - Information presented at the beginning of a text has been found to be more likely to be recalled than information positioned later in the text, especially if it was important to the overall text.

* **Using paragraph headings** - Students have been found to be able to recall significantly more information from texts with headings than they could from texts without headings.

* **Using question-based paragraph headings** - Using question-based headings, as opposed to statement-based headings, has been found to lead to significantly increased recall among low-achieving students.

* **Visually emphasising key points by the use of colour, bolding, underlining, illustrations, etc** - There is some evidence that the use of cuing strategies, such as colour, underlining, bolding and italicising, leads to significantly improved recall of the cued text.

* **Repeating the key points** - Repetition of key points has been found to result in increased attitude changes and in improved recall of the key points.

* **Avoiding the use of symbols** - Using unfamiliar symbols has been found to result in poorer comprehension and compliance than instructions explained in words.

* **Using illustrations (relevant to brochures only)** - Including an illustration in text has been found to lead to significantly increased recall and comprehension, when compared with the same text without an illustration.

How Were the Presentation Criteria Applied?
The letters were studied in their original format to ascertain whether or not they met each of the presentation criteria described above.

How Did the Letters Perform on the Presentation Criteria?
Table 2 indicates how the letters performed on each of the presentation criteria discussed above.
Recruitment Letters
As shown in Table 2, all the recruitment letters put the key points first and avoided the use of symbols. However, only three of the seven recruitment letters visually emphasised the key points or repeated the key points, only one letter had a title explaining the letter and none of the letters used any paragraph headings.

Recruitment Non-Response Prompts
As shown in Table 2, all the recruitment non-response prompts put the key points first and avoided the use of symbols. However, only four of the six recruitment non-response prompts repeated the key points, only two prompts visually emphasised the key points and none of the prompts had a title explaining the letter or used any paragraph headings.

Biennial Reminder Letters
As shown in Table 2, all the biennial reminder letters put the key points first and avoided the use of symbols. However, none of the four biennial reminder letters repeated or visually emphasised the key points, had a title explaining the letter or used any paragraph headings.

Biennial Non-Response Prompts
As shown in Table 2, both the biennial non-response prompts put the key point first and avoided the use of symbols. However, neither of the biennial non-response prompts repeated or visually emphasised the key points, had a title explaining the letter or used any paragraph headings.

**Recommendation 1: Presentation Criteria**
All the recruitment and reminder letters used by the Screening Units should meet the following presentation criteria:
* Include a title explaining the letter.
* Use question-based paragraph headings.
* Visually emphasise the key points of the letter.
* Repeat the key points of the letter.
* Avoid using symbols.
* Put the key points at the beginning of the letter.
Table 2: The performance of the letters on the presentation criteria.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unit</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>C1</th>
<th>C2</th>
<th>D1</th>
<th>D2</th>
<th>G1</th>
<th>G2</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>G</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
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<tr>
<td>Title explaining letter</td>
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<td>✓</td>
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<tr>
<td>Uses paragraph headings</td>
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<td>Uses question-based</td>
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<tr>
<td>Visually emphasises key</td>
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<tr>
<td>Repeats key points</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Avoids using symbols</td>
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<td>✓</td>
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<td>✓</td>
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</tr>
<tr>
<td>Puts key points first</td>
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<td>✓</td>
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<td></td>
</tr>
</tbody>
</table>

NB: A ✓ indicates that the criteria was met.
The Comprehensibility Criteria

How Were the Comprehensibility Criteria Selected?
The following comprehensibility criteria were also obtained from the literature review described above\(^1\). These criteria have been demonstrated to be associated with increased comprehension of written education materials in the following ways:

\*Using short words and sentences\* - Individuals receiving materials with shorter words and sentences have been found to demonstrate higher levels of comprehension and better recall of the information than those receiving materials with longer words and sentences\(^{17,18}\).

\*Avoiding use of the passive voice\* - Individuals reading passages written in the active voice have been found to demonstrate better comprehension than those reading the same passage written in the passive voice\(^{19}\).

\*Avoiding use of the negative voice\* - Individuals reading passages written in the positive voice have been found to demonstrate better comprehension than those reading the same passage written in the negative voice\(^{20,21}\).

In addition to these criteria, it was also considered important that the letters should require a low reading age, in order to maximise the proportion of the target group who could understand them.

How Were the Comprehensibility Criteria Applied?
A Flesch-Kincaid Grade level was calculated for each letter and brochure as an indication of their readability. This grading system is based on the average number of words per sentence, the average number of syllables per 100 words and the proportion of sentences written in the passive voice. As illustrated in Table 3, Flesch-Kincaid Grade levels range from 4 to 16, with a higher grade indicating a more difficult document\(^{22}\).

Table 3 also includes an indication of the proportion of adults who would be expected to understand materials of each grade level\(^{23}\). It should be pointed out that these estimations come from a rather old paper and that average population reading abilities are likely to have significantly improved over time. However, given the age of the women in the target group, it was considered that these figures provided a reasonable rough estimate of the proportion of the target group who could be expected to understand materials at each grade level.
Table 3: Reading Ease scores.

<table>
<thead>
<tr>
<th>Flesch-Kincaid Grade Level</th>
<th>Reading Ease</th>
<th>% target group expected to understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Very easy</td>
<td>90%</td>
</tr>
<tr>
<td>5</td>
<td>Easy</td>
<td>86%</td>
</tr>
<tr>
<td>6</td>
<td>Fairly easy</td>
<td>80%</td>
</tr>
<tr>
<td>7 - 8</td>
<td>Standard</td>
<td>75%</td>
</tr>
<tr>
<td>9 - 10</td>
<td>Fairly difficult</td>
<td>40%</td>
</tr>
<tr>
<td>11 - 14</td>
<td>Difficult</td>
<td>24%</td>
</tr>
<tr>
<td>15 - 16</td>
<td>Very difficult</td>
<td>4½%</td>
</tr>
</tbody>
</table>

Given the age and overall expected education level of the women in the target group, we believe that a Flesch-Kincaid Grade level of 6 or less should be achieved. It is considered that at least 80% of women in the target group could comprehend a letter written at this level.

The calculation of the Flesch-Kincaid Grade levels also provided us with the average number of characters per word, the average number of words per sentence and the percentage of sentences written in the passive voice for each letter. Each letter was also read in order to assess whether sentences were written in the negative voice.

How Did the Letters Perform on the Comprehensibility Criteria?

Table 4 shows how the letters performed on each of the comprehensibility criteria discussed above.

Recruitment Letters

As shown in Table 4, all the recruitment letters avoided using the negative voice and had an average of about 4½ characters per word. The average sentence length was more varied, ranging from 19.0 to 24.6 words per sentence. Similarly, there was much variation in the percentage of sentences written in the passive voice, ranging from 11% to 55% of sentences. Consequently, the Flesch-Kincaid reading grades were also varied, ranging from 7.8 (standard) to 10.8 (difficult) and with most of the letters classified as fairly difficult to read. In other words, the existing recruitment letters are likely to be understood by less than half of the women in the target group.
Evaluation of Mammographic Screening Recruitment Letters

Recruitment Non-Response Prompts
As shown in Table 4, all the recruitment non-response prompts avoided using the negative voice and had an average of about 4½ characters per word. The average sentence length was varied, ranging from 19.4 to 24 words per sentence. Similarly, there was much variation in the proportion of sentences written in the passive voice, ranging from 18% to 37% of sentences. All the Flesch-Kincaid reading grades fell in the fairly difficult group, ranging from 9.0 to 10.5. In other words, these prompts are likely to be understood by less than half of the women in the target group\textsuperscript{22,23}.

Biennial Reminder Letters
As shown in Table 4, all the biennial reminder letters avoided using the negative voice and had an average of about 4½ characters per word. The average sentence length was more varied, ranging from 15.9 to 22.5 words per sentence. Three of the four biennial reminder letters avoided using the passive voice, with the remaining letter having 16% of sentences written in the passive. Consequently, the Flesch-Kincaid reading grades were also varied, ranging from 6.8 (standard) to 10.1 (fairly difficult). In other words, between a quarter and two thirds of women in the target group may not be able to understand the biennial reminder letters\textsuperscript{22,23}.

Biennial Non-Response Prompts
As shown in Table 4, both the biennial non-response prompts avoided using the negative voice and had an average of about 4½ characters per word. The average sentence length was 14.2 words per sentence for one prompt and 21.5 for the other prompt. One prompt contained no sentences written in the passive voice and the other had 12% of sentences written in the passive voice. Consequently, the Flesch-Kincaid reading grades were also varied: 6.2 (fairly easy) for one prompt and 9.6 (fairly difficult) for the other prompt. In other words, between a fifth and two thirds of women in the target group may not be able to understand these prompts\textsuperscript{22,23}.

Recommendation 2: Comprehensibility Criteria
All the recruitment and reminder letters used by the Screening Units should meet the following comprehensibility criteria, so as to be understood by at least 80% of women in the target group:
* Have an average of 4½ or less characters per word.
* Have an average of 15 or less words per sentence.
* Have all sentences written in the active voice.
* Have all sentences written in the positive voice.
* Have a Flesch-Kincaid reading grade of 6 or less.
Table 4: The performance of the letters on the comprehensibility criteria.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unit</th>
<th>Recruitment Letters</th>
<th>Recruitment Non-Response Prompts</th>
<th>Biennial Reminder Letters</th>
<th>Biennial Reminder Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>N characters per word</td>
<td></td>
<td>4.6</td>
<td>4.6</td>
<td>4.6</td>
<td>4.6</td>
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<tr>
<td>N words per sentence</td>
<td></td>
<td>19.0</td>
<td>22.0</td>
<td>19.2</td>
<td>15.9</td>
</tr>
<tr>
<td>% of passive sentences</td>
<td></td>
<td>11.0</td>
<td>31.0</td>
<td>50.0</td>
<td>27.0</td>
</tr>
<tr>
<td>Flesch-Kincaid grade level</td>
<td></td>
<td>7.8</td>
<td>10.2</td>
<td>9.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Avoids use of negative voice</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

NB: A ✓ means that the criteria was met.
**The Content Criteria**

**How Were the Content Criteria Selected?**

As discussed earlier, this group of criteria were developed based on two major theories of behaviour change: the Health Belief Model and the PRECEDE-PROCEED model\(^3-5\)

Based on the Health Belief Model, it was decided that the letters should contain information relating to the severity of breast cancer, individuals’ susceptibility to breast cancer and the perceived costs and benefits associated with having regular mammograms. The use of a fear component in educational messages has also been found to increase changes in both attitudes and behaviour\(^24\): this element was considered in conjunction with the severity factor of the Health Belief Model. The literature review discussed earlier included 16 studies which had investigated the effectiveness of incorporating the Health Belief Model into written health education materials. A meta-analysis of these studies found the four dimensions (severity, susceptibility, costs and benefits) to be significantly related to changes in a number of desired behaviours\(^25\).

Based on the PRECEDE-PROCEED model of health promotion, it was decided that the letters should contain information relating to predisposing factors, to increase the women's motivation to have a mammogram; to enabling factors, to make it easy for the women to have a mammogram; and to reinforcing factors, to increase the likelihood of the women continuing to have regular mammograms. The literature review discussed earlier also found that emphasising the efficacy of the desired behaviour increased the likelihood of individuals adopting a positive attitude towards that behaviour\(^24,26,27\): this element was considered in conjunction with the predisposing factor of the PRECEDE-PROCEED model.

**How Were the Content Criteria Applied?**

The content of each letter was analysed as to which, if any, of these factors each item of information related. Each information item contained in the materials, and how it was coded, is shown in the results Tables 5, 6 and 7 below.
How Did the Letters Perform on the Content Criteria?

**The Health Belief Model Content Criteria**

Table 5 indicates how the letters performed on the Health Belief Model content criteria.

**Recruitment Letters**

As shown in Table 5, only three of the seven recruitment letters contained information about the severity of breast cancer, five of the letters contained information about individuals’ susceptibility to breast cancer, six of the letters contained information about the benefits of having regular mammograms and only one of the letters contained any information about the costs associated with having regular mammograms.

**Recruitment Non-Response Prompts**

As shown in Table 5, four of the six recruitment non-response prompts contained information about the severity of breast cancer, five of the prompts contained information about individuals’ susceptibility to breast cancer, four of the prompts contained information about the benefits of having regular mammograms and none of the prompts contained any information about the costs associated with having regular mammograms.

**Biennial Reminder Letters**

As shown in Table 5, only one of the four biennial reminder letters contained information about the severity of breast cancer, all the letters contained information about individuals’ susceptibility to breast cancer and about the benefits of having regular mammograms and none of the letters contained any information about the costs associated with having regular mammograms.

**Biennial Non-Response Prompts**

As shown in Table 5, neither of the biennial non-response prompts contained information about the severity of breast cancer, both of the prompts contained information about individuals’ susceptibility to breast cancer, one of the prompts contained information about the benefits of having regular mammograms and one of the prompts contained information about the costs associated with having regular mammograms.

**Recommendation 3: Health Belief Model Content Criteria**

The initial recruitment letters, the recruitment non-response prompts and the biennial reminder non-response prompts used by the Screening Units should include information relating to the following Health Belief Model content criteria:
1. The severity of breast cancer, or a fear message.
2. Individuals' susceptibility to breast cancer.
3. The benefits of having regular mammograms.
For the biennial reminder letters, information relating to only criteria 2 is considered necessary. Information relating to the potential costs associated with having regular mammograms should be covered only in the accompanying brochure, where they could be put into perspective against the potential benefits.

The highlighting in Table 5 indicates which of the actual information items should be included in each of the types of letters. If the criteria itself is highlighted, it indicates that the information should be included in an accompanying brochure, rather than in the letter itself. Criteria which are not highlighted at all are not considered necessary for inclusion in either the letters or the brochure.
Table 5: The performance of the letters on the Health Belief Model content criteria.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unit</th>
<th>Recruitment Letters</th>
<th>Non-Response Prompts</th>
<th>Biennial Reminder Letters</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity of BC or fear message</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 in 15 women get BC</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>C1</td>
<td>C2</td>
<td>D1</td>
<td>D2</td>
<td>G1</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>G</td>
<td>A</td>
</tr>
<tr>
<td>BC is leading cancer among women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having mamm could be life saving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't delay</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express concern at non-response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If not joined, it's strongly recommended</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>N women diagnosed with BC per year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>N women who die from BC per year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Having regular mamms protects your health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Susceptibility of individual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available to women aged 50-69/50+</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Women aged 50-69 at higher risk of BC</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most women with BC have no family history</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Most women with BC have no risk factors</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All women should be screened</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Criteria</td>
<td>Unit</td>
<td>Recruitment</td>
<td>Non-Response Prompts</td>
<td>Biennial Reminder</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>------</td>
<td>-------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Letters</td>
<td>Letters</td>
<td>Prompts</td>
<td></td>
</tr>
<tr>
<td>Encourage other eligible women to call for an appointment</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call for appt if not had mamm in last 2 years</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Records show you need re-screening</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Records show not attend for re-screening</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Benefits of having mamms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases chance of early detection</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Can detect BC before you/dr can feel/see it</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases chance of a cure</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Increases chance of avoiding a mastectomy</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Early detection leads to more effective treatment</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Costs of having mamms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full screening may take 2 visits</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May have a slight wait</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**NB:** A ✓ indicates that the information item was included in the letter. The shading indicates where it is recommended that the information item should be included. If the criteria itself is highlighted, it indicates that the information should be included in an accompanying brochure, rather than in the letter itself. Criteria which are not highlighted at all are not considered necessary for inclusion in either the letters or the brochure.
**The PRECEDE-PROCEED Model Content Criteria**

Table 6 indicates how the letters performed on the PRECEDE-PROCEED model content criteria.

**Recruitment Letters**
As shown in Table 6, all of the seven recruitment letters contained some information relating to predisposing factors or the efficacy of having regular mammograms, to enabling factors and to reinforcing factors.

**Recruitment Non-Response Prompts**
As shown in Table 6, all of the six recruitment non-response prompts contained some information relating to predisposing factors or the efficacy of having regular mammograms and to enabling factors and five of the prompts contained information relating to reinforcing factors.

**Biennial Reminder Letters**
As shown in Table 6, three of the four biennial reminder letters contained some information relating to predisposing factors or the efficacy of having regular mammograms and to reinforcing factors and all of the letters contained some information relating to enabling factors.

**Biennial Non-Response Prompts**
As shown in Table 6, one of the two biennial non-response prompts contained some information relating to predisposing factors or the efficacy of having regular mammograms and to reinforcing factors and both of the prompts contained some information relating to enabling factors.

---

**Recommendation 4: PRECEDE-PROCEED Model Content Criteria**

All the recruitment and some of the reminder letters used by the Screening Units should include information relating to the following PRECEDE-PROCEED content criteria:

* **Predisposing factors** - to increase women's motivation to have regular mammograms.
* **The efficacy of having regular mammograms** - to increase women's faith in the ability of mammograms to detect breast cancer.
* **Enabling factors** - to make it easier for women to attend for regular mammograms.
* **Reinforcing factors** - to increase the likelihood of women continuing to attend for regular mammograms.

The highlighting in Table 6 indicates which actual information items should be included in each of the types of letters. If the criteria itself is highlighted, it indicates that the information should be included in an accompanying brochure, rather than in the letter itself. Criteria which are not highlighted at all are not considered necessary for inclusion in either the letters or the brochure.
Table 6: The performance of the letters on the PRECEDE-PROCEED model content criteria.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unit</th>
<th>Recruitment</th>
<th>Non-Response Prompts</th>
<th>Biennial Reminder</th>
<th>Letters</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing factors or efficacy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promise professional and caring service</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mamms checked by 2 accredited radiologists</td>
<td></td>
<td>✓</td>
<td>✓ ✓ ✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to date techniques and equipment</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says when will get results</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal success story</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N women who've already used the service</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most mamms are normal</td>
<td>✓ ✓ ✓</td>
<td>✓</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most BCs detected are curable</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pleasant environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All female radiologists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invited to bring a friend for support</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mention National Prog for Early Detect of BC</td>
<td>✓ ✓ ✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mention NSW Program for Mamm Screening</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ℹ️ ℹ️ ℹ️ ℹ️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mention Sarah Henderson ads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mention recent local ads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mamm takes only 1/2 hour</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promise high quality service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-rays read by radiologists specialising in BC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Criteria</td>
<td>Unit</td>
<td>Recruitment</td>
<td>Biennial Reminder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------</td>
<td>-------------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>Nationally successful program</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular mamms same as having regular Pap tests</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongoing funding depends on women attending</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enabling factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information sheet/brochure inserted</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Refer woman to brochure for more info</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Emphasises that it's free</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tentative appt date and time provided</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tentative appt period provided</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Registration form inserted</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Disabled access instructions included</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple sites available</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Freecall contact number provided</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Opening hours detailed</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NES versions included</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpreter service available</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast implants require special X-rays</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Contact number provided</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Reinforcing factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If already attended, can join the reminder</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If already attended, will receive reminder</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bring any previous breast X-rays</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call if had mamm in last 12 months</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact if want to join reminder service</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>States date of last recorded mamm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>If don't attend/cancel, will get no more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NB:** ✓ indicates that the information item was included in the letter.

The shading indicates where it is recommended that the information item should be included. If the criteria itself is highlighted, it indicates that the information should be included in an accompanying brochure, rather than in the letter itself. Criteria which are not highlighted at all are not considered necessary for inclusion in either the letters or the brochure.
Additional Information Contained in the Letters

Table 7 indicates the additional information contained in the recruitment and reminder letters currently used by the Screening Units.

Recruitment Letters

As shown in Table 7, all of the seven recruitment letters stated that the individual’s name and address had been obtained from the electoral register, three of the letters included an apology if the woman was not due for a mammogram, one of the letters asked the woman to bring the letter to her appointment, one of the letters invited the woman to discuss the issue with her doctor before attending and one of the letters advised the woman to notify the Screening Unit if she did not want to be contacted in the future.

Recruitment Non-Response Prompts

As shown in Table 7, all of the six recruitment non-response prompts stated that the individual’s name and address had been obtained from the electoral register and included an apology if the woman was not due for a mammogram, two of the prompts advised the woman to notify the Screening Unit if she did not want to be contacted in the future, one of the prompts advised the woman to mention the letter when calling the clinic and one of the letters suggested that women would probably be more likely to comply if the recommended behaviour was for the good of their children’s health.

Biennial Reminder Letters

As shown in Table 7, three of the four biennial reminder letters asked the woman either to bring the letter to her appointment or to mention it when contacting the clinic, two of the letters advised the woman to continue monthly breast self-examination between her mammograms, one of the letters advised the woman to report any concerns about her breasts to her doctor, a hospital or to the Screening Unit and one of the letters advised the woman to have annual clinical breast examinations between her mammograms.

Biennial Non-Response Prompts

As shown in Table 7, both the biennial non-response prompts asked the woman either to bring the letter to her appointment and advised her to disregard the letter if she had recently had a mammogram or made an appointment to do so, one of the letters advised the woman to report any concerns about her breasts to her doctor, a hospital or to the Screening Unit and one of the letters advised the woman to continue monthly breast self-examination between her mammograms.

Recommendation 5: Additional Information to be Included

The highlighting in Table 7 indicates which of the additional information items should be included in each of the types of letters. In summary, it was considered that:

1. Both the recruitment letter and the recruitment non-response prompt should include a statement that...
the woman's name and address have been obtained from the electoral register.
2. All the letters and prompts should include an apology if the woman is not due for a mammogram.
3. Both the initial recruitment letter and the biennial reminder letter should include a number which the woman can contact if she does not want to receive any more letters.
4. A statement should be included in the brochure advising women to report any concerns about their breasts to their doctor, a hospital or the Screening Unit.
5. The brochure should also include recommendations that women engage in monthly breast self-examination and annual clinical breast examination between their mammograms.
# Table 7: The additional material contained in the letters.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Recruitment</th>
<th>Biennial Reminder</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Letters</td>
<td>Non-Response Prompts</td>
<td>Letters</td>
</tr>
<tr>
<td>Bring letter to appt</td>
<td>✓</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Invited to discuss with doctor before coming</td>
<td></td>
<td>✓</td>
<td>Y</td>
</tr>
<tr>
<td>Name and address from electoral register</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apologise if not due for a mamm</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact if want no future contact</td>
<td></td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Mention letter when call clinic</td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Would probably comply if for kids' health</td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Report any concerns re: breasts to dr, hospital or us</td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Between mamm, continue monthly BSE</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between mamms, have annual clinical breast exams</td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>If attended recently/made appt, disregard letter</td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

NB: ✓ ✓ indicates that the information item was included in the letter.

The shading indicates where it is recommended that the information item should be included.
Conclusions

There are significant differences between the types and content of letters currently used by NSW Breast Cancer Screening Units to recruit women for biennial mammographic screening. In addition, following the content analyses described in this report, it is believed that the current letters do not represent the optimal materials for achieving their aim. Therefore, it is proposed to develop a gold standard set of letters for use in the recruitment and reminding of women to attend for biennial mammographic screening. This set of letters would include an initial recruitment letter, a prompt letter for women not responding to the initial recruitment letter, a biennial reminder letter, a prompt letter for women not attending for their biennial re-screening and a brochure (probably the Cancer Council leaflet). These gold standard letters will be developed to meet all the presentation, comprehensibility and content criteria recommended in this report.

Recommendation 6: Overall Use of Letters and Brochure

All the Screening Units should use the gold standard letters which will be developed to meet all the criteria recommended in this report. The recruitment letter and non-response prompt and the biennial non-response prompt should always be accompanied by a brochure, which explains the process of having a mammogram in greater detail.

References

8  Loman NL, Mayer RE. Signalling techniques that increase understanding of expository prose. Journal of Educational Psychology 1983;75:402-412.


