Evidence Summary Title:
Interventions to promote mammography among women with historically lower rates of screening: Evidence and implications for public health

Review Quality Rating: 7 (moderate)

Review on which this evidence summary is based:

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This is an evidence summary written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary
This meta-analysis of 38 controlled, experimental, and quasi-experimental studies aimed to determine which types of mammography-enhancing interventions are most effective for groups of women with historically lower use of mammography. Participants studied were women within particular subpopulations of interest including: older, low income, ethnic/minority and urban or rural. To be included, studies had to: (a) aim to increase use of mammography among asymptomatic women in diverse populations; (b) report intervention outcomes based on actual receipt of mammograms, either by self-report or verified report in a clinical database or medical record; and (c) have experimental or quasi-experimental designs. Interventions described in this review included: access enhancing, individual directed, community education, media campaigns and social networking. Outcomes measured include: actual receipt of mammograms (usually based on self-report). Authors report that the combination of access-enhancing and individual-directed interventions was most effective in increasing mammography screening use, though a combination of access-enhancing and system-directed interventions was also quite effective.

Comments on this review’s methodology
This is a methodologically moderate meta-analysis. A focused clinical question was clearly identified. Appropriate inclusion criteria were used to guide the search. A comprehensive search was employed using health and social databases; reviewing reference lists of primary studies; and contacting key informants. The search was limited by language (English). Primary studies were not assessed for methodological quality. The methods were described in sufficient detail so as to allow replication although two reviewers were not involved in quality appraisal. Any discrepancies in appraisal results were not indicated in the review. The results of this review were not transparent. Results were clearly presented in graphical form so as to allow for comparisons across studies. Heterogeneity was assessed. Appropriate analytical methods (fixed effects, random effects) were not employed to enable the synthesis of study results. Larger studies with less variability in results were given greater weight in the aggregation of data.

Why this issue is of interest to public health
Breast cancer is the most common cancer among women aged 20-59 years in Canada. As well it is the most common cancer-related cause of death for women in this age group, second only to lung cancer as a cause of death. The lifetime risk of developing breast cancer is 11.2% (i.e., approximately 1 in 9 women are expected to develop breast cancer). One in 28 women is expected to die from the disease. That is, in 2008, an estimated 22,400 women will be diagnosed with the disease and 5,300 will die from breast cancer. The risk of developing cancer increases with age. Despite scientific evidence to support population-based screening for breast cancer and that quality, organized, long-term screening programs could reduce breast cancer mortality by as much as 25%, participation in screening remains suboptimal (below the 70% target for participation). Differences in screening rates vary among provinces and territories as well as by social determinants such as socioeconomic status, level of education, and for new Canadians.

Evidence and implications
Evidence points are in order of the strength of evidence
**What's the evidence?**

**1. Access-enhancing interventions (14 studies)**
1.1. Participants receiving access-enhancing interventions (those addressing the structural, economic, and geographic barriers to mammography use) only were significantly more likely to be involved in mammography screening than those in comparison groups.

1.2. These access-enhancing interventions:
   - 1.2.1. have had the greatest impact on mammography use compared with all other interventions (i.e., individual directed, system directed, community education, media campaign, social network)
   - 1.2.2. resulted in a 19% increase in mammography use. With a 95% CI of 10.4-27.4%, meaning the true increase in mammography use ranged between 10% and 27%.
   - 1.2.3. include transportation to appointments, facilitated scheduling, mobile vans, vouchers, reduced cost mammograms. The individual impact of each of these strategies is not known from the reported results.

1.3. Interventions used most often in studies reporting a positive impact included reduced costs, and facilitated appointments.

1.4. Interventions that resulted in one-to-one contact with women produced the most positive effects.

**2. Individual-directed interventions in health care settings (15 studies)**
2.1. Individual-directed interventions resulted in a 17.6% increase in mammography use (95% CI 11.6%-24%), meaning the true increase in mammography use ranged between 11.6% and 24%.

2.2. Individual-directed interventions:
   - 2.2.1. included one-to-one counseling, tailored and untailored letters and reminders, and telephone counseling. The individual impact of each of these strategies was not reported upon.
   - 2.2.2. individual directed interventions were almost as effective as access enhancing interventions and more effective than all other interventions.

**3. Community education (13 studies)**
3.1. Community education resulted in an increase in mammography use by 9.7% (95% CI 3.9%-15.6%), meaning the true increase in mammography use ranged between 4 and 15.6%.

3.2. Community education interventions:
   - 3.2.1. included the use of mass media strategies
   - 3.2.2. had less impact compared to access enhancing and individual directed intervention in health care settings, but a greater impact than individual directed interventions in community settings, media campaigns, and social network interventions

**4. Individual-directed interventions in community settings (13 studies)**
4.1. Individual-directed interventions (focusing on the client rather than on the health care system) in community settings resulted in a 6.8% increase in mammography use (95% CI 1.8%-11.8%), meaning the true increase in mammography use ranged between just under 2% to almost 12%.

4.2. Individual-directed interventions in community settings:
   - 4.2.1. had less impact than individual directed interventions in health care settings, and access enhancing interventions, but greater impact then media campaigns and social network interventions

**5. Media campaigns (6 studies)**
5.1. Media campaigns increased mammography use by 5.9% (95% CI 0.3% to 11.5%), meaning the true increase in mammography use ranged between almost no increase to 11.5%.

5.2. No details on the media campaigns were provided

**Implications for practice and policy:**

**1. Access-enhancing interventions**
1.1. Programs to promote mammography screening should include interventions to remove or reduce the structural, economic, and geographic barriers to mammography use such as providing
   - 1.1.1. transportation to appointments
   - 1.1.2. bus passes or taxi chits to cover the costs of transportation
   - 1.1.3. assistance with scheduling appointments
   - 1.1.4. care for dependent children or parents

1.2. Access-enhancing interventions that result in on-to-one contact should be included in mammography screening programs.

1.3. Rigorous program evaluations and high quality studies should be funded and conducted that determine the relative contribution of various access-enhancing interventions.

1.3.2. the cost effectiveness of access-enhancing interventions

**2. Individual-directed interventions in health care settings**
2.1. Programs to increase mammography screening rates should include individually-directed interventions in health care settings. These interventions should include
   - 2.1.1. one-to-one counselling
   - 2.1.2. letters and reminders
   - 2.1.3. telephone counselling

**3. Community education**
3.1. Programs to increase mammography screening rates should include community education through mass media strategies

3.2. Given that these strategies are less effective than other interventions, community education should not be the only intervention implemented to promote mammography screening

**4. Individual-directed interventions in community settings**
4.1. To promote mammography use individual-directed interventions should not be implemented on their own.

4.2. Individual-directed interventions should be implemented in health care settings rather than in the community at large.

**5. Media campaigns**
5.1. Media campaigns should not be used on their own to increase mammography rates
### 6. Social network (7 studies)

- Social network interventions resulted in a 5.8% increase in mammography use (95% CI -0.2 to 11.9%), although this finding was not statistically significant.
- Social network interventions
  - 6.1. had the least impact on mammography use
  - 6.2. included the use of peer leaders and lay health advisors
- The individual impact of each intervention was not provided.

### 7. Combined intervention types (26 studies)

- Combined interventions, in order of effectiveness (from highest to lowest), are
  - 7.1.1. access-enhancing and individual-directed interventions. This combination resulted in a 27% increase in mammography use (ranging between 10% and 44%) (9 studies)
  - 7.1.2. access-enhancing and system interventions. This resulted in a 19% increase in mammography use (ranging between 8% and just over 30%) (5 studies)
- Combined interventions and diverse populations
  - 7.2.1. The greatest impact of combined interventions was observed for older women with a 17.9% increase in mammography (ranging from 10.5% to 25.4%) (11 studies)
  - 7.2.2. Combined interventions resulted in a 12.7% increase among low income women (ranging between 7% and 18%) (26 studies)
  - 7.2.3. When more than 40% of the sample was non-Caucasian, a 12% increase in mammography use was reported (ranging from just under 7% to 17%) (24 studies)
  - 7.2.4. When more than 40% of the sample was African American, mammography use increased by 11.6% and ranged between 6% and almost 17% (16 studies)

### 8. Methodological Issues with the Primary Studies in the Review

- Small number of studies which allowed for examination of paired interventions

### 9. Cost Benefit or Cost-effectiveness Information

- No cost related information was included in the review

### General Implications

- The strongest categories of mammography-enhancing interventions were access-enhancing interventions and individual-directed interventions in health care settings (alone and in combination). Such strategies in combination can be effective in increasing mammography use among populations with historically low mammography rates. High quality research should be conducted that determines the cost effectiveness of these interventions.

**Legend:** CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk

**For definitions see the healthevidence.org glossary [http://www.healthevidence.org/glossary.aspx]**

### References used to outline issue


### Other quality reviews on this topic


**Related links**

- Cancer Control PLANET [http://cancercontrolplanet.cancer.gov](http://cancercontrolplanet.cancer.gov)

**Suggested citation**


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