A cost-effectiveness comparison of three tailored interventions to increase mammography screening
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The study compared three tailored interventions to increase mammography screening. These were tailored telephone counselling, tailored mailing, and a combination of tailored mailing and telephone counselling. These three interventions were compared with usual care (i.e. no intervention).

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised women aged over 50 years with no history of breast cancer and no mammogram in the last 15 months.

Setting
The study setting was the community. The economic study was undertaken in the USA.

Dates to which data relate
The dates to which the effectiveness and resource use data referred were not reported. The price year was not reported.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
No sample size appears to have been determined in the planning phase of the study. In addition, no retrospective power calculations were reported. The participants for the study were identified through computer lists from a hospital’s general medicine clinic in St. Louis, Missouri, and two managed care organisations in Indianapolis, Indiana. A total of 1,390 women were recruited from these two sites over an 18-month period, of which 1,044 completed the baseline interview, the intervention and follow-up. Of these women, 285 were in the usual care group, 241 in the telephone group, 275 in the mail group, and 243 in the combined telephone and mail group. The mean age of the study participants was 65.6 years; the authors did not report the mean age for each of the four study groups.
Study design
The study was a randomised controlled trial that was undertaken in two sites. The authors did not report the method of randomisation. The patients were followed up for 8 weeks, as the researchers believed that 8 weeks was sufficient time for women to obtain screening appointments through their managed care organisations or through the hospital's general medicine clinic.

Analysis of effectiveness
The analysis of the clinical study was conducted on the basis of treatment completers only. The primary outcome used was the mammography adherence rate. Mammogram use was assessed by self-report 8 weeks after the intervention date. The authors reported there were no statistically significant differences in demographic characteristics (age, education, income and living arrangements). A logistic regression model with adherence as the dependent variable was used to test for significant differences.

Effectiveness results
The mammography adherence rate in the control (i.e. usual care) group was 32.63%.

Compared with usual care, all other groups had significantly higher adherence rates:

- 41.9% in the telephone group (odds ratio, OR=1.489, 95% confidence interval, CI: 1.04 to 2.13; p=0.028);
- 43.27% in the mail group (OR 1.575, 95% CI: 1.12 to 2.22; p=0.009); and
- 49.38% in the telephone and mail group (OR 2.014, 95% CI: 1.42 to 2.87; p<0.0001).

Clinical conclusions
The study showed that tailored interventions to increase mammography screening rates were effective in comparison with no intervention.

Measure of benefits used in the economic analysis
The measure of benefits used was the mammography screening rate.

Direct costs
The direct costs included in the analysis were those to the health care provider. These were for wages and benefits of the project personnel, sending reminders, and printing, postage and telephone charges. The authors reported that fixed costs, such as indirect overheads (housekeeping, administration costs, rent, capital depreciation, insurance), were not included in the cost analysis as they assumed that these costs were minimal. The study reported the average costs. Discounting was not relevant, as the costs were incurred during a short time, and was therefore not performed. The price year was not reported.

Statistical analysis of costs
The costs were treated as point estimates.

Indirect Costs
Inline with the perspective adopted, no indirect costs were reported.

Currency
US dollars ($).

**Sensitivity analysis**
No sensitivity analyses were performed.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The mean cost was $0 for the control group, $4.68 for the telephone group, $4.14 for the mail group, and $9.38 for the telephone and mail group.

**Synthesis of costs and benefits**
The costs and benefits were combined using an incremental cost-effectiveness ratio (i.e. the additional cost per percentage increase in the mammography rate).

When compared with no intervention, the additional cost per percentage increase in the mammography rate was $0.50 in the telephone group, $0.39 in the mail group, and $0.56 in the telephone and mail group.

**Authors’ conclusions**
The tailored mail reminder was an effective and economical intervention to increase mammography adherence.

**CRD COMMENTARY - Selection of comparators**
A justification was given for using no intervention as the comparator. It represented current practice in the authors’ settings. You should decide if the comparator represents current practice in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on a randomised controlled trial. This was appropriate for the study question since well-conducted randomised controlled trials are considered to be the ‘gold’ standard study design when comparing health care interventions. However, the authors reported no details on the method of randomisation undertaken. In addition, the study sample does not appear to have been representative of the study population as there was a disproportionate amount (over half of the study sample) of African Americans. The patient groups were reported to be comparable in demographic characteristics, although the results of the statistical analyses were not reported. Appropriate statistical analyses were performed to test for statistically significant differences in the outcomes.

**Validity of estimate of measure of benefit**
The estimation of benefits (mammography rates) was obtained directly from the effectiveness analysis. The mammography rates were assessed by self-report, which might not be as reliable as administrative or clinical records. However, the authors reported, quoting other studies, that self-report has been found to be highly accurate for assessing mammography at the population level.

**Validity of estimate of costs**
All the categories of cost relevant to the perspective adopted were included in the analysis. However, the authors reported that fixed costs, such as indirect overheads (housekeeping, administration costs, rent, capital depreciation, insurance), were not included in the cost analysis as they assumed that these costs were minimal relative to variable costs. The costs and the quantities were not reported separately, which will limit the generalisability of the authors'
results. Resource use and price data were derived from the study. No statistical or sensitivity analysis of the costs was undertaken, which will limit the generalisability and validity of the authors' results. Since all costs were incurred during a short time, discounting was not relevant. The price year was not reported, which will hamper any possible inflation exercises.

Other issues
The authors made appropriate comparisons of their findings with those from other studies that had also found tailored interventions to increase mammography screening to be effective. The issue of generalisability to other settings was not addressed. The authors do not appear to have presented their results selectively. However, in their conclusions, the authors reported that the mail intervention was the most cost-effective. As the authors did not compare the combined telephone and mail intervention with the mail intervention alone, and did not derive a cost-effectiveness threshold (i.e. the maximum willingness to pay for a percentage increase in mammography rate), it is not possible to determine if this is the case from the results presented in this study. The authors did not report any further limitations to their study.

Implications of the study
The authors reported that further work is needed to determine the reasons for differences in effectiveness among demographically and culturally different populations.

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Other publications of related interest


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