Authors' objectives
To determine the effectiveness of patient reminder systems and general practitioner (GP) reminder systems in promoting the uptake of cervical smear (Pap) tests.

Searching
MEDLINE and PsycLIT (inception - December 1996), English language only, search terms listed in the paper, and bibliographies of retrieved papers. An attempt was also made to identify unpublished reports of relevant trials, but this yielded no additional studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) comprising a no-treatment (normal care) control group, with randomisation occurring at the patient, GP or practice level.

Specific interventions included in the review
The intervention had to be in a general practice or family medicine setting.

The inclusion criteria stated that the GP intervention consisted of prompts to GPs to invite eligible women to have a smear test when they presented for some other reason. Actual GP interventions included in the review were tagged notes, computerised reminders plus educational and administrative input, preventive care flow sheets in patients’ records alone and combined with GP education. GPs in control groups received educational and administrative input, had computer record of actions without reminders, delivered standard care, or intervention not described.

The inclusion criteria stated that women in the patient reminders intervention groups were to receive invitations to attend for a smear test. Actual interventions included in the review were invitation letter only, invitation letter with appointment, and telephone call. The women in control groups received standard care.

The length of follow-up across the included studies ranged from 6-24 months.

Reference standard test against which the new test was compared
The review did not include any diagnostic accuracy studies that compared the performance of the index test with a reference standard of diagnosis.

Participants included in the review
The GPs of women eligible to receive a cervical smear test, and women eligible to receive a cervical smear test, with eligibility defined according to age, hysterectomy status, and date of previous test.

Outcomes assessed in the review
Proportions of patients undergoing smear test (recorded by GP, evidenced by computer entry, or self-reported).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
Adequacy of sampling frame, rigour of randomisation, effectiveness of randomisation (extent of imbalances in confounders between intervention and control groups), adequacy of description of the experiences of intervention and
control groups, bias in outcome assessment, and extent to which assumptions had to be made in order to present the
data in terms of rates. Each of the above criteria were scored on a scale of 1-5 (with 1 being poor and 5 being 
excellent), and then an average quality score was generated for each study. Quality ratings were made independently 
by two reviewers. Where there were discrepancies, a final rating was arrived at by consensus.

Data extraction

Data were extracted on intervention characteristics, outcome measures, follow-up, and study quality. The proportions
of women screened within a defined interval in intervention and control groups were calculated. Where there were two 
interventions of the same type, results were combined into one rate. Each analysis was conducted on an intention-to-
treat basis, with a loss to follow-up being regarded as a failure to take up the option of a smear test. The risk difference 
with associated 95% confidence intervals (CI) was calculated for each included study. Data were extracted by one of 
the authors and reviewed by the other two. Any discrepancies were discussed and resolved by consensus.

Methods of synthesis

How were the studies combined?

A summary risk difference was calculated with associated 95% CIs with studies weighted according to the inverse of 
the variance, using a method adapted from Fleiss and Gross (1991) (see Other Publications of Related Interest). The
number needed to treat was also calculated (the number of women for whom either GP or patient reminders need to be 
generated in order to achieve one additional test).

How were differences between studies investigated?

Heterogeneity was assessed using the random-effects model of DerSimonian and Laird (see Other Publications of 
Related Interest). Total weighted squared deviations from the summary risk difference were computed and compared 
with a chi-squared distribution with degrees of freedom one fewer than the number of studies. Sensitivity analyses were 
performed by the progressive omission of each study from the combined analysis and recalculation of the summary 
risk difference and homogeneity chi-squared statistic.

Results of the review

Overall, ten RCTs were included. Two trials examined the effectiveness of GP reminders alone, four investigated the 
impact of patient reminders alone, and four dealt with both types of intervention. The number of women receiving 
patient reminders was 2,881 and for those receiving reminders from GPs who had been prompted to do this 7,899. It is 
unclear whether there is some overlap between these figures. The number of women in control groups was 7,656.

The range of quality scores across studies was 2.25-3.92. Weighting the results of each study according to the quality 
score made negligible difference to the overall results.

Women who had received GP reminders to have a smear test were statistically significantly more likely to have the 
test compared with control participants, risk difference (RD) 6.6% (95% confidence interval (CI): 5.2, 8.0%). The 
corresponding number needed to treat was 15.2 (95% CI: 12.6, 19.3). However, there was significant between-study 
heterogeneity (p<0.001). When one study with an outlying estimate was omitted from the analysis, the remaining set 
of studies were homogeneous, with a summary RD of 7.9% (95% CI: 6.5, 9.4%).

The summary RD for patient reminder studies was 4.9% (95% CI: 2.6, 7.2%) and the number needed to treat was 20.3 
(95% CI: 13.9, 38.2). There was significant between-study heterogeneity (p<0.001). The removal of the same outlying 
study again induced homogeneity and the RD was 10.8% (95% CI: 8.1, 13.6%).

Cost information

Results from one study suggested that, although patient reminders were more effective, GP reminders were more cost-
effective because of their opportunistic approach.
Authors' conclusions
The results of this meta-analysis indicate that both GP reminders and patient reminders can be effective tools in encouraging women to have regular smear tests. Patient reminders appear to be more effective than GP reminders when compared with standard care, however, this finding should be interpreted with caution, since some studies were included in both the GP reminder analysis and the patient reminder analysis, and so were not from independent sets of results.

CRD commentary
Overall, this is a well-conducted systematic review. The research question, selection criteria, validity assessment, extracted study details, and methods used for pooling are all appropriate and clearly presented. In addition, some useful details are provided about the process of the review. The literature search was limited, and it is possible that had other sources been accessed, further relevant studies may have been identified. The authors mention that they attempted to locate unpublished material, but failed to do so. The actual methods used are not described. The authors rightly infer the possibility of publication bias during their discussion.

There are several reasons why the findings of this review should be interpreted with some caution. There were differences in the nature of interventions and length of follow-up across trials, even within the homogeneous subgroup of studies. The assumptions applied to convert data from individual studies into a suitable format for comparison may have weakened the analysis. In the case of the outlying study, it would have been useful if the authors had investigated why this result differed from the other studies. However, the authors highlight these issues. Finally, only two of the included studies were conducted in the UK, and the discussion of results relates to an Australian context, so the generalisability of these findings is uncertain.

Implications of the review for practice and research
Practice: The authors stated that GPs should make use of GP and patient reminder systems. This is not to suggest that such systems should take the place of national registers. Instead, GP and patient reminders should be viewed as complementing these larger registers, having the advantage of a more personalised and sometimes more timely approach, and being able to identify women who have never previously been screened.

Research: The authors did not state any implications for further research.

Funding
VicHealth; General Practice Branch of the Commonwealth Department of Health and Family Services.

Bibliographic details

PubMedID
9830190

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Continuity of Patient Care /organization & administration; Family Practice /organization & administration; Female; Global Health; Humans; Randomized Controlled Trials as Topic; Vaginal Smears /utilization; Women's Health Services

AccessionNumber
11998009031

Date bibliographic record published
31/01/2000

Date abstract record published
31/01/2000

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.